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LYDERYSTĖS STILIAUS ĮTAKA DARBUOTOJŲ ĮSITRAUKIMUI IR DALYVAVIMUI VISAPUSIŠKAME KOKYBĖS VALDYME	THE INFLUENCE OF LEADERSHIP STYLE ON EMPLOYEE ENGAGEMENT AND INVOLVEMENT IN TOTAL QUALITY MANAGEMENT

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INTRODUCTION

Total Quality Management (TQM) is often described as one of the most influential approaches for organizational excellence, continuous improvement, and long-term competitiveness. Under conditions where global competition is intensified and customer expectations are changed quickly; reliance is often placed on quality management so that process performance is improved and stable value creation is supported (Goetsch & Davis, 2016). Still, strong evidence in the literature suggests that the success of TQM is not ensured only by technical tools and formal quality techniques (Alkhaldi & Abdallah, 2021; Cavallone & Palumbo, 2021; Wang & Meckl, 2022; Ali et al., 2022; De Koeijer et al., 2024). A central role is also assigned to human factors, because employee behavior and everyday routines are shaped through leadership, communication, and shared norms (Mosadeghrad, 2014; Zeng et al., 2015).

In the contemporary literature, TQM is frequently framed as a system where "hard" and "soft" elements are combined (Ali & Johl, 2022; Sciarelli et al., 2020; Filippi et al., 2023). Statistical tools, standardization, and process management are usually placed on the hard side. Leadership, culture, participation, and motivation are usually placed on the soft side. A strong argument is offered that improvement is not sustained when only hard elements are emphasized, because quality routines are not internalized by employees and quality activity is treated as an administrative obligation rather than a shared way of working (Filippi, Gaio, & Zamarian, 2023). From a similar viewpoint, TQM programs are also discussed as being vulnerable when leadership support is weak or when employee involvement is not encouraged in a consistent manner (Mosadeghrad, 2014).

A wide level of academic interest is reflected in studies on leadership and quality management. Leadership is often treated as a driver of quality, because direction is set, priorities are clarified, and the "importance of quality" is communicated through managerial behavior. For example, evidence from Indian firms suggests that leadership styles are linked with a stronger focus on continuous improvement and innovation-oriented quality practices, although stronger associations are often reported with continuous improvement than with innovation (Kumar & Sharma, 2018). Related evidence is also provided in research where transformational

leadership is connected with stronger quality management practices, and differences are discussed between manufacturing and service settings (Bouranta, 2021). Such findings are commonly interpreted as an indication that quality is not embedded automatically, even when formal tools are available, because leadership behavior is a key condition for employee alignment with quality objectives.

At the same time, leadership is also treated as an important antecedent of employee engagement and related psychological states. In servant leadership research, engagement is frequently explained through mechanisms such as empowerment, team cohesion, and positive organizational climate, while limiting conditions such as high pressure and weak work life balance are also highlighted (Canavesi & Minelli, 2022). In a similar direction, evidence in educational workplace contexts suggests that work engagement is stimulated through servant leadership, and a mediating role is assigned to trust in the leader (Rahal, 2022; Zhou et al., 2022). In project based organizational environments, engagement is also presented as being strengthened through servant leadership, while employee resilience and organizational support are treated as important pathways (Cai et al., 2024). Such findings are relevant because engagement is usually linked with performance related outcomes and discretionary effort, so the translation of leadership behavior into organizational results is often explained through employee psychological investment (Christian et al., 2011).

Despite the strong evidence for separate links, a gap is still observed in the way leadership, engagement, and TQM related employee involvement are integrated in one empirical framework. In many studies, leadership is examined as a predictor of TQM practices or quality outcomes, while engagement is examined as a separate outcome of leadership, often outside a quality management context (Bouranta, 2021; Kumar & Sharma, 2018; Zhou et al., 2022). As a result, limited empirical clarity is provided on one key question: through what mechanism is leadership translated into stronger employee involvement in quality improvement work. Employee involvement is treated as central in many TQM frameworks, yet the role of engagement as an explanatory pathway is still not tested widely in the specific context of quality related participation and daily improvement activity (Filippi et al., 2023; Mosadeghrad, 2014).

The problem of the thesis is therefore framed through an insufficient empirical understanding of how leadership style is linked with employee involvement in quality

improvement activity, and how employee engagement is positioned as a mechanism that helps explain the relationship. **The purpose of the thesis** is to examine the influence of leadership style on employee involvement in TQM related practices, while the mediating role of employee engagement is evaluated in the same framework. A clearer explanation is expected to be produced for the way leadership behavior is translated into quality involvement at the employee level. Practical relevance is also expected to be supported, because guidance can be provided for managers who aim to strengthen quality participation not only through procedures, but also through employee motivation and psychological investment in work (Canavesi & Minelli, 2022; Filippi et al., 2023; Kumar & Sharma, 2018).

Based on the aim of the thesis, the following **objectives** are set.

1. To analyze the theoretical foundations of leadership styles, employee involvement, and Total Quality Management.

2. To assess empirical findings on the relationship between leadership styles and employee engagement.

3. To examine the contribution of employee engagement to employee involvement in TQM outcomes, including continuous improvement and innovation.

4. To identify potential mediating or moderating relationships among leadership style, employee engagement, and TQM effectiveness.

5. To integrate a conceptual framework is developed so that leadership styles, employee engagement, and TQM implementation.

The literature review is grounded in academic articles, empirical studies, and theoretical publications, and materials are obtained through scholarly databases such as Scopus, Web of Science, and Google Scholar. Peer reviewed sources and recent publications are prioritized so that relevance and reliability are strengthened within the analysis.

A quantitative, cross sectional survey design was selected because relationships among leadership style, employee engagement, job satisfaction, workplace stress, and employee involvement in TQM practices were needed to be tested in a structured and comparable way. Measurement quality was assessed through

reliability analysis and confirmatory factor analysis so that construct validity was supported. Hypotheses were tested through multiple regression with robust standard errors.

AI tools and platforms were used as supportive instruments during the writing stage. ChatGPT was used to summarize peer reviewed articles that may be relevant to the study, so that key concepts, variables, and findings were extracted more efficiently from the wider spectrum of studies.

The thesis is structured in the following way. The Introduction is used to outline relevance, the research gap, the aim, the objectives, and the structure of the study. In Chapter 1, a literature review is provided, and theoretical concepts and empirical findings related to leadership styles, employee involvement, and TQM are analyzed. In Chapter 2, the methodology is presented through the research design, data collection methods, and analytical techniques. In Chapter 3, data analysis and results are reported, and empirical findings are provided. In Chapter 4, a discussion is offered, and results are interpreted in relation to the literature. A conclusion and recommendations section is then presented, where key insights and practical implications are summarized.

1. THEORETICAL ANALYSIS OF THE ROLE OF LEADERSHIP STYLES AND EMPLOYEE ENGAGEMENT IN EMPLOYEE INVOLVEMENT IN TQM PRACTICES

1.1 Foundations and principles of Total Quality Management (TQM)

Total Quality Management (TQM) is often described as a broad managerial philosophy that is aimed at sustained organizational excellence. A focus is placed on continuous improvement, quality assurance, and customer satisfaction, because long term performance is expected to be strengthened through disciplined quality work across the organization (Aquilani et al., 2017; Mosadeghrad, 2014). In many discussions, quality is positioned as a strategic priority rather than a technical add on, so integration is required across daily processes and management routines (Sousa & Voss, 2002). A similar logic is also reflected in formal quality management system standards, where consistent delivery and continuous improvement are treated as central requirements (International Organization for Standardization, 2015).

A central theme in TQM scholarship is the interaction between technical practices and human centered elements. Technical practices such as statistical process control, documented procedures, and standard based systems are often presented as an analytical base for the reduction of variation and the improvement of process stability (International Organization for Standardization, 2015; Sadikoglu & Zehir, 2010). Yet effectiveness is not explained only by procedures and metrics. Support is also required from leadership commitment, employee involvement, learning routines, and quality culture, because participation and shared meaning are linked with the everyday use of quality methods (Mosadeghrad, 2014; Zeng et al., 2015). A dual structure is therefore emphasized in the literature through the distinction between hard and soft quality management. Hard elements are associated with tools and systems, while soft elements are associated with people-oriented practices, so a balance is often treated as necessary for sustained results (Escrig-Tena et al., 2018; Zeng et al., 2015). When imbalance is seen, a risk is often described where quality programs are reduced to compliance activities, and deeper commitment is not developed (Aquilani et al., 2017; Sousa & Voss, 2002).

The principles linked with TQM also show the strategic nature of the approach. Customer focus is often positioned as a key benchmark for performance, because

satisfaction and loyalty are influenced by perceived quality and consistent service delivery (International Organization for Standardization, 2015; Psomas & Jaca, 2016). Continuous improvement is highlighted because systematic refinement is encouraged, and performance is expected to be raised through repeated adjustments rather than one time change efforts (Aquilani et al., 2017). Employee involvement is emphasized because quality is treated as a collective responsibility, and improvement work is carried by employees who observe problems and suggest solutions in daily processes (Mosadeghrad, 2014). Leadership commitment is also placed at the center, since direction is set, resources are allocated, and cultural reinforcement is supported through managerial behavior (Bouranta, 2021; Mosadeghrad, 2014). For that reason, effectiveness is shaped by the way quality is made normal in the organization's routines, rather than being treated as an occasional project.

In the wider body of research, TQM is linked to several organizational outcomes such as operational efficiency, innovation related capability, customer outcomes, and long term competitiveness. Such outcomes are not attributed only to the adoption of quality tools. The behavioral side of quality management is also emphasized, and attention is given to trust, participation, communication, and empowerment, because improvement is supported through employee effort and knowledge sharing (Escrig-Tena et al., 2018; Sadikoglu & Zehir, 2010). For example, empirical work suggests that relationships between TQM practices and firm performance are partly explained through employee performance and innovation performance, so human and technical factors are treated as connected rather than separate (Sadikoglu & Zehir, 2010). A similar direction is taken in research where hard and soft quality management are treated as complementary, and innovation performance is examined together with proactive behavior at the employee level (Escrig-Tena et al., 2018). More recent discussion also keeps attention on quality culture and the way quality values are translated into behaviors that support stakeholder value and organizational performance (Fundin et al., 2025). From such a perspective, the effectiveness of TQM is determined by the level of integration between technical design and human commitment, because sustained improvement is difficult when one side is ignored (Zeng et al., 2015).

Critiques of TQM are often used to reinforce the need for closer examination of the way quality programs are implemented. It is argued that weak results are

produced when TQM is treated mainly as a checklist of procedures, because cultural and strategic orientation is then reduced and quality is interpreted as formal compliance rather than shared practice (Oakland, 2014; Sousa & Voss, 2002). A similar concern is also described in institutional research, where formal systems are sometimes adopted for legitimacy while daily activities are kept unchanged, so a gap can be created between what is written and what is practiced (Meyer & Rowan, 1977). In standards-based contexts, ceremonial adoption is also reported, where certification or documentation is maintained but deeper improvement work is limited, so the expected value of quality initiatives is weakened (Boiral, 2007). For that reason, a risk is highlighted where quality work is kept visible on paper, while real improvement is not sustained.

Failure and discontinuity are also discussed in the literature when leadership behaviour and employee related conditions are not treated as central. It is suggested that TQM programs do not persist when honest internal dialogue, consistent leadership expectations, and organization wide commitment are not supported, because real change is not institutionalised (Beer, 2003). Implementation barriers are also described in review-based work, where insufficient leadership support and weak employee involvement are positioned among the factors that limit success (Mosadeghrad, 2014). A strategic and operations management perspective is also used to argue that quality programs can fail when enterprise-wide alignment is not created, because competing priorities and fragmented responsibility can restrict consistent quality action (Asif et al., 2009). Cultural fit is also emphasized in empirical research, since organizational culture is associated with the extent to which TQM practices are used and supported in operations (Baird et al., 2011).

Direct relevance is created for the present study through such arguments. Leadership style is linked with communication, motivation, and shared commitment, and employee involvement is treated as a core requirement in quality improvement routines (Aquilani et al., 2017; Mosadeghrad, 2014). For that reason, the relationship between leadership and TQM is not fully explained when employee engagement with quality initiatives is not examined. An analytical base is therefore created in the present section so that later research questions are supported through reasoning grounded in research that connects hard and soft sides of quality management (Casprini et al., 2023; Sousa & Voss, 2002).

1.2   Theoretical perspectives on the leadership styles

Leadership is often described as a key factor through which organizational performance, culture, and employee related outcomes are shaped. Over time, leadership theories are shown as moving from early trait-based explanations toward behavioral and contingency approaches, and a later shift is also described toward relational and transformational perspectives (Yukl, 2013). In quality management settings, leadership style is not treated only as a source of strategic direction. A strong role is also assigned to leadership as a driver of employee motivation and commitment to continuous improvement, because quality routines are carried through daily behavior rather than policy statements alone (Oakland, 2014; Sousa & Voss, 2002).

1.2.1   Transformational leadership

Transformational leadership is presented as one of the most widely studied styles in organizational research. The concept is linked with the work of Burns, where transformational leadership is contrasted with transactional leadership, and later development is associated with Bass, where measurable components are described and organizational applications are emphasized (Bass, 1985; Burns, 1978). Core features are commonly described through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Riggio, 2006). Under such leadership, employees are encouraged through an inspiring direction, and existing practices are questioned so that learning and creativity are supported (Bass & Riggio, 2006). In the quality management context, a positive association is reported between transformational leadership and the use of TQM practices, especially practices that require employee participation and a continuous improvement mindset (Bouranta, 2021). Work engagement is also discussed as being strengthened under supportive leadership conditions, and performance related benefits are reported through engagement related mechanisms in organizational research (Breevaart et al., 2014; Christian et al., 2011). At the same time, criticism is noted in the leadership literature. Transformational leadership is sometimes treated as too broad or too idealised, and caution is raised because charismatic influence is not always converted into consistent operational discipline without supporting systems and clear follow through (Yukl, 2013).

1.2.2 Transactional leadership

A different focus is described under transactional leadership. The approach is grounded in contingent reward and corrective action, so clarity of expectations is emphasized, and compliance is reinforced through monitoring and feedback (Bass, 1985). Evidence is provided in meta-analytic research that transactional leadership, especially contingent reward, is positively related to performance, although the pattern is usually weaker than transformational leadership for many outcomes (Judge & Piccolo, 2004). In stable environments, effectiveness is often explained through routine efficiency and predictable task structures, because role clarity and performance monitoring are supported (Yukl, 2013). Yet limitations are also discussed in dynamic settings, because deeper commitment and proactive improvement are not always stimulated when motivation is tied mainly to external rewards and corrective control (Yukl, 2013). In TQM frameworks, process adherence and standard compliance can be supported through transactional leadership, because rules and responsibilities are clarified and deviations are corrected (Oakland, 2014). However, intrinsic motivation for continuous improvement is not always activated through such an approach, so a supportive role is suggested rather than a primary role when long term quality culture is expected to be strengthened (Sousa & Voss, 2002; Yukl, 2013).

1.2.3 Servant leadership

Servant leadership is introduced as a human centered philosophy where employee growth and wellbeing are prioritized, and where the leader is positioned as a supporter rather than a controller. A strong emphasis is placed on serving others, and key characteristics such as empowerment, humility, authenticity, interpersonal acceptance, and stewardship are highlighted in major reviews (van Dierendonck, 2011; Eva et al., 2019). Because empowerment and psychological support are promoted under such leadership, a close connection is often drawn with employee engagement. For example, a qualitative study showed that employee engagement is encouraged through pathways such as empowerment, team cohesion, positive organizational climate, and challenging work design (Canavesi & Minelli, 2021). Similar patterns are also supported in broader evidence, because positive leadership styles, including servant leadership, are linked with higher work engagement in a meta-analytic review (Decuypere & Schaufeli, 2021). In project-based organizations, engagement is also explained through personal and job resources that are strengthened by servant

leadership, and resilience and organizational support are positioned as important mechanisms (Cai et al., 2024). Relevance is therefore created for quality-oriented settings, because employee involvement and shared responsibility are typically expected when continuous improvement is pursued (American Society for Quality, n.d.).

1.2.4 Adaptive leadership

Adaptive leadership is conceptualized through a focus on learning, flexibility, and problem solving under uncertainty. Leadership is described as being required when complex challenges are faced, and mobilization of people is emphasized so that adjustment and change are supported (Heifetz et al., 2009). Visionary leadership is described through the communication of a long-term direction, where meaning is created and effort is aligned around shared goals (Liu et al., 2022). In management research, attention is often given to both styles because shifting environments are addressed and sustained improvement is supported through organizational learning. Evidence is also provided that adaptive leadership can be related to innovation related outcomes in settings where change capability is relevant, although context conditions are usually important (Chughtai et al., 2023). For visionary leadership, links with innovative performance are also reported, because follower motivation and coordinated action are strengthened when a clear future orientation is communicated (Wang et al., 2024).

1.2.5 Participative/democratic leadership

A broader discussion in leadership research also includes participative or democratic leadership. Under such leadership, decision making is shared and employee voice is encouraged, so problem solving is supported through involvement (Wang et al., 2022). A performance related benefit is also suggested in evidence on participative decision making, although variation is reported across contexts and designs (Sagie, 1994). In applied studies, participative leadership is connected with speaking up behavior and knowledge sharing, which are often treated as helpful conditions for improvement work in organizations (Toufighi et al., 2024). In quality-oriented environments, alignment is therefore suggested, because employees are expected to contribute to process improvement rather than only follow instructions (American Society for Quality, n.d.).

1.2.6 Liassez faire leadership

Laissez faire leadership is described in a contrasting way, because leader involvement is reduced and guidance is limited. Negative implications are often discussed in the literature, especially when role clarity and support are expected. A large field study indicated that laissez faire leadership is associated with role conflict, role ambiguity, and coworker conflict, and psychological distress is also linked through such stressors (Skogstad et al., 2007). A meta-analysis also placed laissez faire leadership among the least effective styles across a wide set of outcomes, while stronger associations were reported for more active styles (Judge & Piccolo, 2004). Related evidence on destructive leadership further supported negative relationships with employee attitudes and wellbeing, while positive relationships were reported with harmful outcomes such as turnover intention and counterproductive behavior (Schyns & Schilling, 2013). Some recent work also suggested that mixed effects can be observed under certain supportive climates, yet work disengagement was still highlighted as a key risk under low leader involvement (Zheng & Li, 2024). For quality management systems, misalignment is therefore often implied, because coordinated effort, feedback, and leadership commitment are commonly expected in continuous improvement work (American Society for Quality, n.d.).

Taken together, leadership styles are shown as varying in suitability depending on organizational conditions and improvement expectations. Transformational, servant, and participative leadership approaches are usually positioned as more compatible with involvement-based management, because empowerment, shared responsibility, and employee voice are promoted (Eva et al., 2019; Wang et al., 2022). Transactional leadership is often described as useful for process discipline, yet motivational pathways for proactive involvement are not always emphasized. Laissez faire leadership is generally positioned as risky for involvement dependent systems, because weak guidance and unclear priorities are associated with stressors that can undermine employee contribution (Skogstad et al., 2007; Judge & Piccolo, 2004). Through such comparisons, a conceptual base is formed for examining the way leadership relates to employee engagement and employee involvement in quality improvement activities.

1.2.7 Linking leadership styles and TQM practices

The success of Total Quality Management (TQM) is often explained through the role of leadership. A strong influence is assigned to leaders because vision is set, organizational culture is shaped, and employee participation in quality initiatives is mobilized through daily managerial behavior (Deming, 1986; Aquilani et al., 2017). Technical tools of TQM are also described as important, since structure and procedures are provided through methods, documentation, and measurement routines (Oakland, 2014). Still, deep embedding of quality practices into everyday work is not ensured only by standards and techniques. A leadership role is therefore emphasized, because commitment is signaled, priorities are clarified, and meaning is created around improvement activity (International Organization for Standardization, 2015; Laohavichien et al., 2011). In empirical work, leadership behaviour is also linked with quality management practices and quality performance, which supports the idea that leadership is not only symbolic in quality systems (Laohavichien et al., 2011).

Transformational leadership is often presented as compatible with TQM values, because a focus is placed on vision, empowerment, and continuous improvement. Under such leadership, quality can be approached as a shared direction rather than as a forced routine, since employee ownership is encouraged through inspiration and support (Bass, 1985; Bass & Riggio, 2006). In quality management research, a positive relationship is reported between transformational leadership and the implementation of TQM practices, and differences are also discussed between manufacturing and service contexts (Bouranta, 2021). Evidence is also provided that leadership styles are related to "TQM focus," and stronger effects are reported for continuous improvement than for innovation in a survey of Indian firms, which suggests that incremental improvement routines are embedded more easily than innovation outcomes under certain leadership approaches (Kumar & Sharma, 2018). Through such findings, transformational leadership is linked with conditions where improvement behaviour is encouraged, and quality practices are used more consistently.

Transactional leadership is described in a more limited way in relation to TQM. Emphasis is placed on contingent reward and corrective action, so compliance and performance monitoring are supported through clear expectations and feedback (Bass, 1985). A meta-analytic comparison of leadership styles also shows that transactional

leadership is related to performance, especially through contingent reward, although weaker patterns are often reported when the style is compared with transformational leadership across broader outcomes (Judge & Piccolo, 2004). In quality settings, process adherence and standard compliance can be strengthened when roles are clarified and corrective action is applied. Such a direction fits the logic of formal systems, where consistent fulfilment of requirements is expected and leadership responsibilities are stated explicitly (International Organization for Standardization, 2015). Yet long term cultural change is not always stimulated through transactional leadership alone, because extrinsic control is emphasized more strongly than internal commitment to improvement (Judge & Piccolo, 2004; Oakland, 2014). For that reason, a supporting role is often implied, while a primary role is more often assigned to leadership approaches that encourage participation and proactive improvement (Sousa & Voss, 2002).

Servant leadership is increasingly discussed as suitable for quality-oriented environments, especially because employee growth, empowerment, and ethical responsibility are emphasized. The leader is positioned as a facilitator, and attention is directed toward serving employees so that they can perform and develop (Greenleaf, 1977; van Dierendonck, 2011). A systematic review also describes servant leadership as a distinct approach where follower needs are prioritized, and relational mechanisms are central (Eva et al., 2019). In applied evidence, servant leadership is linked with employee engagement through empowerment and positive climate, and engagement is explained as being strengthened when employees feel valued and supported (Canavesi & Minelli, 2022). Relevance is created for TQM programs because quality circles, suggestion activity, and improvement teams depend on voluntary involvement and sustained attention, not only on formal rules (Oakland, 2014; Zeng, Phan, & Matsui, 2015). When servant leadership is applied, involvement can be encouraged through trust and psychological safety, which can make quality participation more meaningful for employees (Canavesi & Minelli, 2022; Eva et al., 2019).

In more recent research, the role of leadership style is often highlighted in discussions of employee involvement in Total Quality Management (TQM). A positive relationship between leadership and TQM practices is reported in post 2010 quality

management studies. In an empirical study in Thailand, leadership was examined together with quality management practices, and leadership was positioned as an important driver for the development of quality management routines inside organisations (Laohavichien, Fredendall, & Cantrell, 2011). Even though the focus was placed on quality management practices broadly, the logic was relevant for employee involvement, because involvement is normally treated as part of the people side of TQM.

In addition, a cross-national study in the quality and reliability management field compared the effectiveness of leadership styles for TQM between USA based and China based firms. Transformational leadership was found to have a stronger positive influence on TQM in the USA sample, while transactional leadership was found to show a stronger influence in the China sample (Cho & Jung, 2014). Such evidence suggested that leadership style is related to TQM practices and that differences can be shaped by context. For the present study, a key implication is provided: employee involvement in quality practices can be strengthened when leadership behaviour fits the expectations of the organisational setting and the national culture.

More recently, a comparison between manufacturing and service firms also indicated that transformational leadership is positively related to TQM practices, and stronger influence was reported on the "soft" TQM side where people-related practices are included (Bouranta, 2021). Since employee involvement is a major part of soft TQM, such evidence supported the expectation that leadership style is related to employee involvement in quality routines.

Overall, leadership styles are discussed as differing in the way alignment is created with TQM principles. Transformational leadership is often linked with stronger adoption of TQM practices through vision and empowerment, while transactional leadership is often linked with process discipline and compliance (Bouranta, 2021; Judge & Piccolo, 2004). Servant leadership is also positioned as relevant, because engagement and involvement are supported through people centered mechanisms that strengthen participation in quality work (Canavesi & Minelli, 2022; Eva et al., 2019). Such variation supports the need for closer examination of leadership style when employee involvement in quality improvement is treated as a central outcome of TQM.

1.3   Employee engagement and employee involvement in TQM practices

Employee engagement is discussed widely in organizational behavior, and strong attention is given to the topic in recent literature. A link is often suggested with productivity and long-term organizational sustainability, because higher energy at work is expected to support stronger effort and persistence in daily tasks (Saks & Gruman, 2014). At the same time, conceptual complexity is also emphasized. A single definition is not used across studies, and several conceptualizations are described in the research stream, so careful clarification is required when engagement is selected as a core construct (Bailey et al., 2017; Saks & Gruman, 2014).

In more recent syntheses, work engagement is described as a positive and motivational state where high energy is combined with dedication and a strong focus on work tasks (Bakker & Albrecht, 2018). Under such framing, an engaged employee is not only described as "satisfied." A stronger psychological investment is implied, and the employee role is approached as a source of active involvement rather than passive task completion. Differences from related attitudes are also highlighted in the literature, because job satisfaction is treated as an evaluative judgment about one's job, while engagement is presented as a state that includes energy and active immersion in work (Albrecht et al., 2015; Bailey et al., 2017).

Measurement of engagement is also addressed as an important methodological issue. In many empirical designs, standardized scales are used so that engagement is captured in a consistent way across respondents and settings. An ultra short version of the Utrecht Work Engagement Scale is introduced and validated across multiple national samples, and internal consistency and factorial validity are reported as acceptable in such evidence (Schaufeli et al., 2019). Through such validation studies, a practical advantage is created for survey research, because a reliable indicator is provided while respondent burden is kept lower.

Explanations of engagement are also developed through the role of working conditions. The Job Demands and Resources theory is frequently used for such explanation, because job demands are described as requiring effort and creating strain, while job resources are described as supporting goal achievement and motivating work behavior (Bakker & Demerouti, 2017). Evidence is also provided through longitudinal meta analytic findings, where job resources are reported as meaningful predictors of

engagement over time (Lesener et al., 2020). Under such reasoning, engagement is not treated as a fixed personality feature. Instead, engagement is shaped through the balance between demands and resources in the work environment.

The impact of engagement on outcomes is also supported through meta-analytic research. A large-scale meta-analysis based on the Job Demands and Resources framework shows strong associations between engagement and job satisfaction, and a similarly strong association is reported with organizational commitment (Mazzetti et al., 2023). Such patterns are important for organizational research, because the strengthening of satisfaction and commitment is usually linked with lower withdrawal tendencies and stronger long-term attachment to the organization. In addition, engagement is described as desirable for both public and private organizations, because connections are reported with task performance, citizenship behavior, and client satisfaction in the broader research stream (Bakker & Albrecht, 2018).

A more specific relevance is also created for contexts where innovation and improvement are prioritized. When engagement is higher, contribution to improvement initiatives is expected to be supported, because energy and dedication are directed toward work processes instead of being reduced by disengagement. In operations and improvement research, employee involvement is described as a key condition for continuous improvement efforts, and positive relationships are reported between improvement related practices and employee involvement (Galeazzo et al., 2021; van Assen, 2021). Evidence is also provided in a quality management setting, where the effect of work engagement on Total Quality Management practices is examined in a petrochemical organization, and engagement is treated as a relevant factor for TQM related practices (Boikanyo & Heyns, 2019). Under such findings, engagement is positioned as a meaningful human factor that can support quality-oriented behavior and sustained improvement participation.

The principles of TQM are dependent on active participation. Continuous improvement, teamwork, and customer focus require more than basic compliance, because consistent initiative and shared responsibility are expected across employees (Sousa & Voss, 2002; Zeng et al., 2015). When engagement is low, TQM initiatives are often described as becoming symbolic. In such a situation, quality routines can be

followed only on paper, and limited operational impact is likely to be produced (Douglas & Judge, 2001; Oakland, 2014). When engagement is high, more ideas are typically contributed, change is accepted more easily, and improvement effort is sustained over time, since energy and dedication are invested into work roles (Bakker & Albrecht, 2018; Christian et al., 2011). A similar logic is also supported in quality-oriented evidence, where work engagement is treated as a factor that is positively related to TQM practices in an industrial context (Boikanyo & Heyns, 2019).

Leadership is also connected with such processes, because empowerment, support, and intrinsic motivation are shaped by leadership behavior. Servant and transformational leadership styles are often presented as closely aligned with TQM requirements, since employee development, vision, and individualized support are emphasized (Bass & Riggio, 2006; Eva et al., 2019). In empirical leadership research, engagement is also treated as responsive to daily leadership signals, because resources and meaning are strengthened under supportive leadership (Breevaart et al., 2014). For that reason, engagement is treated as a bridge that can link leadership style to stronger employee involvement in quality work. A mediating role is therefore highlighted in the present research, because leadership is expected to shape the psychological conditions that encourage employees to contribute to improvement activities, while engagement is expected to translate that motivation into action (Christian et al., 2011; Saks & Gruman, 2014).

A short clarification of employee engagement is also required so that the role of the construct is understood clearly. Engagement is commonly described as a positive and motivational work-related state, where energy and dedication are combined with strong focus on work tasks (Bakker & Albrecht, 2018). Under such framing, engagement is not treated as the same as job satisfaction. Job satisfaction is usually interpreted as an evaluation of one's job conditions, while engagement is treated as a more active state where effort and absorption are reflected (Bailey et al., 2017). For measurement in survey research, short, validated instruments are frequently used, and the UWES family of scales is often applied because vigor, dedication, and absorption are represented as key dimensions (Schaufel et al., 2019).

A further summary can also be added through the conditions that shape engagement. The Job Demands and Resources theory is frequently used, because job

demands are described as draining energy when pressure is high, while job resources are described as strengthening motivation when autonomy, feedback, and support are provided (Bakker & Demerouti, 2017). Longitudinal evidence also suggests that job resources are reliable predictors of engagement over time, which implies that engagement can be strengthened through managerial and organizational practices rather than being treated as fixed (Lesener et al., 2020). Such reasoning provides a clear link to TQM, because quality improvement requires resources such as time, information, feedback, and encouragement. When resources are supported through leadership and work design, engagement is more likely to be sustained, and employee involvement in quality initiatives is more likely to be strengthened (Boikanyo & Heyns, 2019; Zeng et al., 2015).

1.3.1 Relationship between employee engagement and employee involvement in TQM practices

Employee involvement is often treated as one of the central "people side" conditions in Total Quality Management. In many frameworks, quality improvement is not explained only through formal procedures and technical tools, because daily participation is required for problems to be noticed, ideas to be offered, and process changes to be carried out (Sousa & Voss, 2002). In systematic reviews of TQM critical success factors, employee involvement is repeatedly listed together with leadership commitment and training, which suggests that quality systems are strengthened when participation is supported across levels rather than limited to a quality department (Aquilani et al., 2017). A similar message is also given in health care quality evidence, where TQM success is described as being linked with human factors such as staff involvement and supportive culture (Mosadeghrad, 2014).

A practical explanation is provided in operations research through the nature of continuous improvement. Continuous improvement is usually described as a repetitive effort where small process issues are identified and addressed over time. Under such work, employee participation is needed because employees are often closest to operational problems and work routines (Galeazzo et al., 2021). When participation is limited, improvement activity can be slowed, since information about process bottlenecks is not captured well and ownership of solutions is weakened. Empirical evidence supports that employee participation and managerial authority are related to continuous improvement and operational performance, which indicates that

improvement capability is shaped through the combination of involvement and decision rights (Galeazzo et al., 2021). A related finding is also reported in research on training and employee involvement, where continuous improvement is supported more strongly when involvement is combined with a common improvement method and shared routines (van Assen, 2021). Under such evidence, involvement is not treated as a symbolic value. Instead, involvement is treated as an operational mechanism through which improvement is sustained.

Employee engagement is also positioned as relevant for TQM involvement because engagement is associated with energy, dedication, and active investment in work roles. When engagement is higher, discretionary effort is more likely to be directed toward improvement activity, since work is approached with stronger persistence and attention (Bakker & Demerouti, 2017). Empirical research in a petrochemical organization also supports a positive relationship between work engagement and TQM practices, which suggests that engaged employees are more connected to quality routines and improvement participation (Boikanyo & Heyns, 2019). Such evidence is relevant for TQM settings, because improvement depends on initiative and learning, and initiative is typically reduced when disengagement is present.

The role of involvement is also discussed through its links with broader organizational outcomes. In studies that connect TQM practices with firm performance, employee related factors are often placed among the mechanisms that support results, since leadership, In studies that connect TQM practices with firm performance, employee related factors are often placed among the mechanisms that support results (Xu et al., 2020; Gambi et al., 2022; Bayo-Moriones & de la Torre, 2021; Zehir et al., 2023). For example, evidence is provided that TQM practices are linked with firm performance through innovation and employee performance pathways, which implies that performance is supported when quality routines are translated into employee behavior and capability (Sadikoglu & Zehir, 2010). The relationship between quality practices and performance is also described as depending on the balance between hard and soft elements of quality management. Soft elements are usually described as including involvement, empowerment, and supportive leadership, while hard elements include tools and process control (Zeng et al., 2015).

When soft elements are weak, tool adoption can remain superficial, and long term improvement can become difficult (Sousa & Voss, 2002; Zeng et al., 2015).

Organizational culture is also treated as an enabling condition for employee involvement in TQM. When open communication and shared norms are supported, improvement participation is usually encouraged and resistance is reduced. Empirical evidence suggests that organizational culture is associated with the extent to which TQM practices are used, and operational performance differences are also explained partly through culture and practice alignment (Baird et al., 2011). From such a viewpoint, employee involvement in TQM is shaped not only by individual willingness, but also by the climate where quality contribution is expected, recognized, and supported.

Employee engagement is commonly discussed as a motivational state where energy, dedication, and absorption are experienced at work. Evidence is provided that leadership behaviour is connected to engagement in daily work. For example, daily transformational leadership was associated with daily work engagement in a diary study, and engagement was also associated with performance-related outcomes (Breevaart et al., 2014). Such evidence suggested that engagement is responsive to leadership signals, and it is not only shaped by stable personality differences.

A broader review also discussed leadership as a contextual driver of engagement, with an emphasis placed on leadership as a resource that supports meaning and motivation at work (Decuypere & Schaufeli, 2020). When leadership is treated as supportive and motivating, engagement is expected to rise, because employees are more likely to feel that their work is important and manageable.

Employee involvement in TQM requires active behaviours, such as identifying problems, participating in improvement activities, and making small changes in daily work. Those actions are close to extra-role behaviour and proactive contribution, so engagement is relevant because it is linked to such behavioural outcomes. In a quantitative review, work engagement was reported as positively related to task performance and contextual performance, which includes contribution beyond formal job duties (Christian et al., 2011). Since involvement in quality improvement often requires discretionary effort, such evidence supported the expectation that engagement is associated with employee involvement in TQM.

More directly, a statistically significant positive relationship was reported between work engagement and TQM practices in a petrochemical organisation, where engagement was treated as a driver of participation in quality practices (Boikanyo & Heyns, 2019). Even if the operationalisation was different across studies, the logic supports the present model, because engaged employees are more likely to participate in quality improvement work.

Overall, employee involvement and engagement are positioned as important conditions for effective TQM practice. Participation is required for continuous improvement routines, and engagement supports the energy and persistence needed for improvement work. Evidence across operations, quality management, and engagement research suggests that quality programs are strengthened when employee involvement is made normal in daily work and when motivational resources are supported through systems and leadership (Aquilani et al., 2017; Boikanyo & Heyns, 2019; Galeazzo et al., 2021).

1.3.2 Other factors affecting employee involvement in TQM practices

Employee involvement in TQM practices is often explained through factors that shape willingness, energy, and persistence in improvement work. Participation in problem identification, suggestion activity, and small process change is usually required beyond basic task completion, so involvement is frequently discussed as a behavior that depends on both attitudes and working conditions (Sousa & Voss, 2002; Aquilani et al., 2017). A similar emphasis is placed in reviews of TQM critical success factors, where employee involvement is repeatedly presented as a condition for sustained implementation, together with leadership support and training (Aquilani et al., 2017). Under such framing, involvement is not treated as automatic. A supportive psychological state is typically required, and barriers are also expected when work conditions are strained.

Job satisfaction is commonly positioned as one of the attitudes that supports involvement in organizational initiatives. When higher satisfaction is reported, a more positive evaluation of work and the employer is reflected, so a stronger readiness to contribute beyond minimum requirements is often expected (Judge et al., 2001). In broader organizational behavior research, extra role contribution is frequently examined through organizational citizenship behavior, and satisfaction is regularly

reported among the meaningful antecedents of such contribution (Podsakoff et al., 2009). A close conceptual link can be drawn between citizenship type behaviors and employee involvement in TQM, because quality participation is often expressed through voluntary idea sharing, cooperative teamwork, and persistence in small improvement actions. Under such logic, satisfaction is expected to support involvement because frustration and withdrawal are reduced, while a more constructive orientation toward change is encouraged. Evidence in quality management reviews also supports the relevance of staff attitudes, since successful quality programs are described as relying on human factors and workplace climate rather than tools alone (Mosadeghrad, 2014).

Workplace stress is also treated as a relevant condition for employee involvement in quality improvement. Stress is often discussed as rising when job demands are high and resources are insufficient, and motivation is then expected to be weakened because energy is drained and recovery is limited (Bakker & Demerouti, 2017). Under the Job Demands–Resources theory, job demands are associated with strain, while job resources are associated with work motivation and engagement, so participation in additional improvement activity is expected to be easier when demands are manageable and resources such as support, feedback, and autonomy are available (Bakker & Demerouti, 2017). Longitudinal evidence also suggests that resources are consistent predictors of work engagement over time, which supports the idea that work conditions can shape active involvement through sustained motivational states (Lesener et al., 2020). Since involvement in TQM often requires discretionary effort and attention to process details, stress is expected to limit involvement when workload pressure is strong and cognitive capacity is reduced.

The interaction between satisfaction and stress is also considered important in the explanation of involvement. Under positive conditions, satisfaction can support persistence in improvement work because a sense of value and fairness is perceived. Under high stress conditions, even satisfied employees can be constrained because time and attention are limited, and quality improvement can be postponed in favor of urgent tasks. A similar tension is implied in operations and quality research, where involvement is treated as dependent on practical enabling conditions such as time, authority to make small changes, and managerial support for participation (Sousa & Voss, 2002; Mosadeghrad, 2014). For that reason, involvement in TQM is often

explained most clearly when both attitude factors and strain factors are considered together rather than in isolation.

Job satisfaction and workplace stress are also considered to be significant factors affecting employee involvement in TQM practices. In engagement research, job satisfaction is often found to correlate strongly with engagement, which suggests that both constructs can move together (Mazzetti et al., 2023). For that reason, job satisfaction is treated as a control variable in the present study, so that the unique contribution of engagement to employee involvement in TQM can be examined more clearly.

Workplace stress is often treated as a job demand that can reduce energy and persistence. In Job Demands–Resources theory, job demands are described as factors that can lead to strain, while job resources are described as factors that support engagement and motivation (Bakker & Demerouti, 2017). Stress is therefore treated as a factor that can weaken engagement and can also reduce the likelihood of voluntary involvement in quality initiatives. Leadership is also discussed as relevant for stress and well-being outcomes, because leadership behaviour shapes the psychosocial work environment (Harms et al., 2017). For the present study, stress is therefore treated as a plausible moderator of the engagement–involvement relationship, and it is also treated as a control variable in main models.

The following table summarizes the studies on the factors influencing employee involvement in TQM.

Table 1

Summary of past studies on the determinants of employee involvement in TQM practices

Study	Context and method	Main relationship relevant for the present study
Laohavichien et al. (2011)	Survey study in a quality management context	Leadership was positioned as important for the development of quality management practices, supporting leadership as an antecedent of employee involvement in TQM.
Cho and Jung (2014)	Comparative study (USA and China), SEM	Leadership styles were found to differ in their influence on TQM practices across contexts, supporting a leadership–TQM link.
Bouranta (2021)	Manufacturing vs service comparison	Transformational leadership was reported as positively related to TQM practices, especially the soft side of TQM.

Breevaart et al. (2014)	Daily diary design	Transformational leadership was associated with work engagement, supporting leadership as a driver of engagement.
Decuypere and Schaufeli (2021)	Review of leadership–engagement research	Leadership was described as a contextual driver of engagement through motivational and resource-based mechanisms.
Christian et al. (2011)	Quantitative review	Engagement was associated with task and contextual performance, supporting engagement as linked with discretionary contribution.
Boikanyo and Heyns (2019)	Petrochemical organisation survey	Work engagement was positively associated with TQM practices, supporting engagement as linked with quality participation.
Bakker and Demerouti (2017)	JD–R theory review	Stress was positioned as a job demand that undermines energy, supporting stress as a negative condition for engagement.
Harms et al. (2017)	Meta-analysis	Leadership was linked with stress-related outcomes, supporting stress as relevant in leadership models.
Mazzetti et al. (2023)	Meta-analysis	Engagement was reported as strongly associated with job satisfaction, supporting job satisfaction as a control.

Source: author's construction based on literature review.

Overall, employee involvement in TQM practices is commonly supported when job satisfaction is higher and when stress related pressure is kept at manageable levels. A more positive work evaluation is associated with stronger readiness to contribute, while high demands without adequate resources are associated with reduced capacity for discretionary improvement effort (Judge et al., 2001; Bakker & Demerouti, 2017). Such reasoning justifies the inclusion of job satisfaction and workplace stress as explanatory factors in models where employee involvement in quality improvement is treated as a key outcome.

2. RESEARCH METHODOLOGY ON THE INFLUENCE OF LEADERSHIP STYLE ON EMPLOYEE ENGAGEMENT AND INVOLVEMENT IN TOTAL QUALITY MANAGEMENT

2.1 Purpose of the empirical research

The empirical research was designed to determine how leadership style is related to employee involvement in Total Quality Management (TQM) practices, and how employee engagement is positioned inside that relationship. A practical problem was addressed, because TQM involvement is not expected to be sustained only by formal procedures. Participation in problem identification and quality improvement activities is often required at the employee level, and such participation is influenced by the work environment.

A cross-sectional quantitative design was selected, because relationships between multiple constructs were examined at one point in time through structured survey items (Saunders et al., 2019).

The research model was focused on the following core logic. Leadership style was treated as an explanatory variable. Employee involvement in TQM practices was treated as the outcome variable. Employee engagement was treated as a mediator, because motivation and psychological investment in work were expected to translate leadership behaviours into active quality participation. Workplace stress was treated as a moderating condition for the engagement to involvement link, because stress was conceptualised as a job demand that can reduce energy and sustained participation. Job satisfaction was treated as a control variable, because overlap with engagement is often reported, and clearer interpretation of engagement effects is supported when job satisfaction is controlled. Job demands and job resources were used as theoretical background, where job demands are linked to strain and lower motivation, and job resources are linked to engagement and positive work states (Bakker & Demerouti, 2017).

2.2 Conceptual model and hypotheses

Based on the objectives of the study and the past studies reviewed, the following main hypotheses are derived.

H1 (main effect). A positive relationship is expected between leadership style and employee involvement in TQM practices. (Bouranta, 2021; Cho & Jung, 2014; Laohavichien et al., 2011)

H2 (main effect). A positive relationship is expected between leadership style and employee engagement. (Breevaart et al., 2014; Decuypere & Schaufeli, 2021)

H3 (main effect). A positive relationship is expected between employee engagement and employee involvement in TQM practices. (Boikanyo & Heyns, 2019; Christian et al., 2011)

H4 (moderation effect). Employee engagement is expected to mediate the relationship between leadership style and employee involvement in TQM practices. (Breevaart et al., 2014; Decuypere & Schaufeli, 2021)

H5 (moderation effect). The positive relationship between employee engagement and employee involvement in TQM practices is expected to be weaker under higher workplace stress. (Bakker & Demerouti, 2017; Harms et al., 2017)

Job satisfaction and workplace stress are expected to be associated with employee engagement and employee involvement in TQM practices. For that reason, job satisfaction and stress are treated as control variables in the main models. (Bakker & Demerouti, 2017; Mazzetti et al., 2023)

Figure 1

Research model
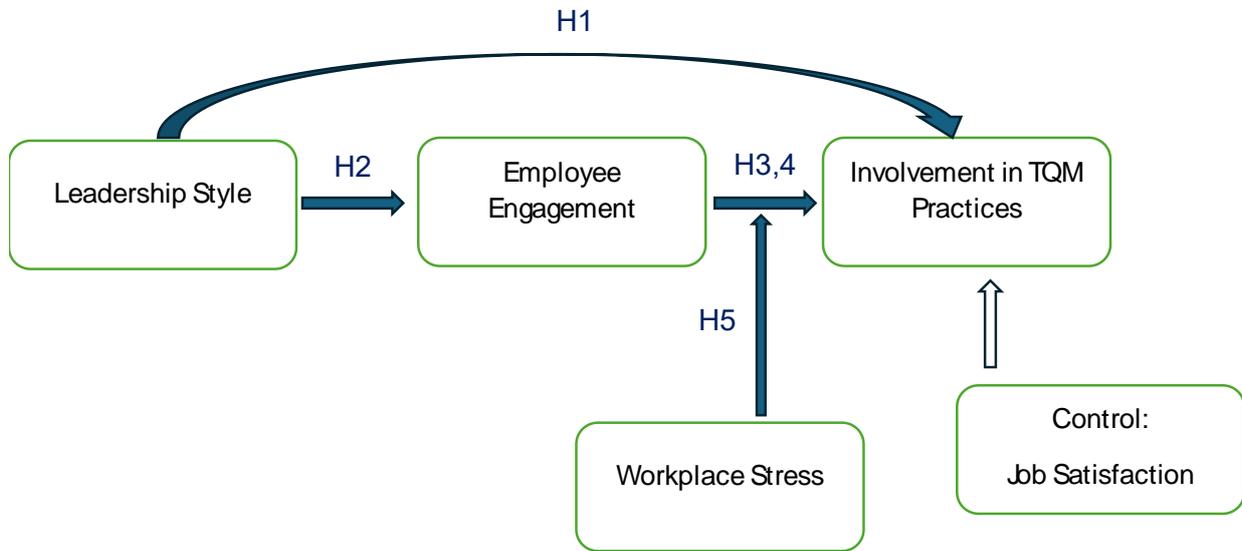
Source: author's construction.

A regression-based approach was planned for mediation and moderation tests, because direct effects, indirect effects, and conditional effects can be estimated clearly with bootstrapping procedures (Hayes, 2018).

The selected method is treated as appropriate for three main reasons. First, the study aim was focused on relationships between psychological and behavioural constructs, and such relationships are commonly examined through structured quantitative surveys in business research (Saunders et al., 2019). Second, the constructs in the model were subjective experiences, such as engagement and stress, so direct measurement through employee self report was required. Third, mediation and moderation hypotheses were included, and regression based conditional process analysis was suited to estimating direct, indirect, and conditional effects in a transparent way, especially when bootstrapped inference is applied (Hayes, 2018).

Online distribution through Google Forms was also treated as practical for reaching working respondents across different locations with low administrative cost. Data quality risks were recognised, and design and screening procedures were used to reduce such risks, because data quality factors in online questionnaires are discussed as important in the survey methods literature.

2.3   Variables, measurement approach and data collection

Five constructs were measured with multi-item Likert statements. A five-point response format was used, where higher values represented stronger agreement. All items were written as statements that can be answered by employees, because perceptions of leadership behaviours, engagement, satisfaction, stress, and quality participation were targeted. Established measurement traditions were used as conceptual anchors, so that content validity could be supported through prior operational definitions.

Table 2

Measurement of constructs used in the questionnaire

Construct	Items (n)	Example content areas	Conceptual source base
Leadership style (transformational and involving)	6	vision communication, inspiration, idea encouragement, involvement in decisions, coaching support, recognition	Multifactor Leadership Questionnaire tradition (Bass & Avolio, 1995)
Employee involvement in TQM	6	problem identification, participation in quality activities, managerial attention to suggestions, authority for small changes, feedback on initiatives, quality as expected work	TQM measurement dimensions (Saraph, Benson, & Schroeder, 1989; Flynn, Schroeder, & Sakakibara, 1994)
Job satisfaction	5	overall satisfaction, reward fairness, growth opportunity, willingness to choose organisation again, turnover thinking	Job satisfaction survey traditions (Spector, 1985; Weiss et al., 1967)
Employee engagement	5	energy, enthusiasm, absorption, pride	Utrecht Work Engagement Scale tradition (Schaufeli et al., 2002)
Workplace stress	5	workload pressure, difficulty relaxing, too many responsibilities, change related stress, health impact	Perceived stress tradition (Cohen, Kamarck, & Mermelstein, 1983)

Source: author's construction based on studies cited in the table.

Even though some scale foundations were older, the item wording in the questionnaire was aligned with the study context and the practical problem. For that reason, psychometric checks were required, and internal consistency reliability was assessed for each multi-item scale.

Reliability was assessed primarily with Cronbach's alpha, because internal consistency for composite scales is commonly evaluated through alpha coefficients

(Tavakol & Dennick, 2011). In addition, item to total patterns were reviewed so that any weak item could be identified in a transparent way.

Data were collected through an online self-administered questionnaire, and the distribution was conducted digitally. The questionnaire link was distributed by the author through private sharing and professional networks. It was sent directly to potential respondents via private messages and email so that participation could be encouraged in a targeted way. In addition, the survey link was posted on the author's LinkedIn profile and shared in LinkedIn connections, so that broader and more diverse responses could be collected. A non-probability sampling approach was used, and participation was based on voluntary response through the distribution channels that were available to the researcher. Such a strategy was treated as suitable for an explanatory study focused on relationships between perceptions and attitudes, especially when organisational access is limited (Saunders et al., 2019).

The sample size of 205 was treated as adequate for the planned regression models with mediation and moderation, because estimation with bootstrapped confidence intervals is commonly applied at similar sample sizes in organisational research (Hayes, 2018). If confirmatory factor checks were added, sample size considerations were guided by empirical work on model complexity and solution propriety in structural modelling research (Wolf et al., 2013).

2.4   Data screening, data analysis and ethical considerations

Before hypothesis testing, data screening procedures were applied. Missing values were checked, and response patterns were reviewed to detect incomplete submissions. As a result, there was no incomplete responses as the survey would not enable the participant to submit it unless all the questions are answered. Descriptive statistics were produced for each item, so that unusual distributions could be identified. Composite scores were created by averaging items per construct, because equal weight scoring is commonly used for Likert based multi-item measures when internal consistency is acceptable (DeVellis, 2017; Hair et al., 2019).

Common method bias risk was considered, because self-report survey data were used for all main constructs. Procedural remedies were applied in the questionnaire design, including clear wording, separation of construct blocks, and assurance of anonymity to reduce evaluation concerns. In addition, statistical checks

were planned, such as a single factor test and collinearity review, because method bias sources and remedies are discussed in the behavioural methods literature (Podsakoff, MacKenzie, & Podsakoff, 2012).

Data analysis. The analysis was designed to move from basic description to model testing. Reliability was evaluated first, because scale quality was required before relationships could be interpreted. After reliability checks, correlation patterns were reviewed, and hypothesis tests were conducted.

Table 3

Planned analysis steps and outputs

Step	Aim	Technique
1	Describe sample and item patterns	Frequencies and descriptive statistics
2	Check scale quality	Cronbach's alpha, item to total review (Tavakol & Dennick, 2011)
3	Examine bivariate relationships	Correlations among composites
4	Test direct effects (H1–H3)	Multiple regression models
5	Test mediation (H4)	Bootstrapped indirect effect estimation (Hayes, 2018)
6	Test moderation (H5)	Interaction term model with probing (Hayes, 2018)
7	Add controls	Job satisfaction and stress entered as covariates

Source: author's construction.

Bootstrapping was used for indirect effects, because indirect effects are not required to follow normal distribution assumptions, and confidence intervals based on resampling are recommended in regression based mediation frameworks (Hayes, 2018). For moderation, the interaction between engagement and workplace stress was created from mean centred predictors so that interpretation was simplified, and conditional effects were examined at lower and higher stress values.

Use of secondary sources. Secondary sources were used to support construct definitions, item development logic, and analytical decisions. Priority was given to peer reviewed journal articles, methodological handbooks, and scale development sources, because higher completeness and traceability are expected in such materials. Survey method guidance was supported by business research methodology literature, where justification for cross sectional survey design is provided (Saunders et al.,

2019). Guidance for online survey administration and response optimisation was aligned with tailored design logic in survey research, where mode specific procedures are discussed (Dillman et al., 2014).

Ethical considerations. Participation was voluntary, and informed consent information was provided at the beginning of the form. Anonymity was emphasised so that fear of evaluation could be reduced. No direct identifiers were required for analysis purposes, and results were reported in aggregated form. Data were stored in a restricted access format, and access was limited to research use.

3. RESULTS OF THE EFFECTS OF LEADERSHIP STYLES ON EMPLOYEE ENGAGEMENT AND INVOLVEMENT IN TOTAL QUALITY MANAGEMENT

3.1 Demographic/organizational statistics

The demographic and organisational profile of respondents is summarised in Table 4, based on the 205 valid survey responses collected via Google Forms.

Table 4

Summary of respondent characteristics

Variable	Category	n	%
Role	Frontline employee	109	53.2
	Specialist / Analyst	56	27.3
	Supervisor / Team leader	20	9.8
	Middle manager	11	5.4
	Senior manager / Executive	9	4.4
Department	Operations / Production	46	22.4
	IT / Digital / Data	42	20.5
	Finance / Accounting	38	18.5
	Quality / TQM / Process improvement	29	14.1
	Sales / Marketing / Customer service	28	13.7
	HR / People Management	22	10.7
Organizational tenure	1–3 years	95	46.3
	Less than 1 year	64	31.2
	4–6 years	40	19.5
	7–10 years	5	2.4
	More than 10 years	1	0.5
Company size	51–200	109	53.2
	1–50	59	28.8
	201–500	30	14.6
	501–1,000	5	2.4
	More than 1,000	2	1.0
Sector	Services (e.g. banking, telecom, hospitality)	81	39.5
	Public sector / Government	49	23.9

	Manufacturing / Industry	49	23.9
	Education / Health	26	12.7
Tenure in current position	1–3 years	111	54.1
	Less than 1 year	69	33.7
	4–6 years	22	10.7
	More than 6 years	3	1.5
Education level	Bachelor	97	47.3
	Master	77	37.6
	Doctorate	17	8.3
	Secondary	14	6.8

Source: author's construction based on survey results.

A clear concentration was observed at the operational level. More than half of responses were provided by frontline employees (53.2%), while specialist and analyst roles were also strongly represented (27.3%). Managerial roles were represented to a smaller degree, since supervisors accounted for 9.8%, middle managers accounted for 5.4%, and senior managers accounted for 4.4%. A workforce perspective was therefore reflected more strongly than an executive perspective, which is important because employee involvement in TQM is experienced mainly through day to day routines.

Departmental representation was spread across multiple functions. The largest share was recorded in Operations and Production (22.4%), and a similarly high share was recorded in IT, Digital, and Data (20.5%). Finance and Accounting also represented a notable part of the sample (18.5%). A direct relevance to quality topics was also visible, because Quality, TQM, and Process Improvement roles accounted for 14.1% of responses. Sales and customer-facing areas were also included, and HR roles were present, which suggested that views were collected from both operational and support functions.

Organisational tenure was mostly concentrated in earlier years. Tenure of 1–3 years was reported by 46.3%, and tenure below one year was reported by 31.2%. Longer tenure groups were less frequent, and tenure above ten years was almost absent. A similar pattern was observed for tenure in the current position, where 54.1% reported 1–3 years and 33.7% reported less than one year. Such patterns suggested that many respondents were still in relatively new roles, so leadership behaviour and workplace conditions could be experienced more intensely during adaptation periods.

Company context was mainly mid-sized, since firms with 51–200 employees accounted for 53.2%. Smaller organisations were also common (28.8%). Services were the largest sector (39.5%), while public sector and manufacturing were equally represented (23.9% each). Education and health also contributed a meaningful share (12.7%). Education level was relatively high, because Bachelor and Master degrees together accounted for 84.9%.

3.2 Descriptive statistics

Table 5 below summarizes information about the descriptive statistics on the variables of study.

Table 5

Descriptive statistics for construct scores

Construct	n	Mean	SD	Min	Max	Skewness	Kurtosis
Leadership style (LS)	205	4.20	0.56	2.50	5.00	-0.47	-0.20
Employee involvement in TQM (TQM)	205	4.35	0.54	2.50	5.00	-0.73	0.05
Job satisfaction (JS)	205	4.21	0.65	1.80	5.00	-0.89	0.75
Employee engagement (EE)	205	4.29	0.44	2.60	5.00	-0.71	0.56
Workplace stress (WS)	205	2.51	1.20	1.00	5.00	0.55	-1.37

Source: author's construction.

A generally positive pattern was reflected in the descriptive statistics of the main constructs. Leadership style was rated at a high level, since the mean value was 4.20 and the scale maximum was 5.00. A moderate spread was indicated by the standard deviation of 0.56, so responses were not fully identical, yet strong disagreement was not dominant. A negative skewness value was recorded, so higher response options were selected more frequently than lower options. Such a pattern was expected when supportive and involving leadership behaviours were perceived by many respondents.

Employee involvement in TQM was evaluated even more positively. A mean of 4.35 was observed, and the variability was moderate with a standard deviation of 0.54. The negative skewness value also suggested that agreement was concentrated toward higher points of the scale. It can be argued that quality related participation was

perceived as normal in many workplaces in the sample, because responses were clustered around agreement rather than neutrality.

Job satisfaction and employee engagement were also reported at high levels. Job satisfaction had a mean of 4.21 with a standard deviation of 0.65, and employee engagement had a mean of 4.29 with a smaller standard deviation of 0.44. Higher engagement consistency was therefore suggested, since dispersion was lower for engagement than for satisfaction. Negative skewness in both variables indicated that favourable work attitudes were more common than unfavourable ones.

Workplace stress showed a different direction. The mean value was 2.51, which was closer to the lower side of the scale. A much larger standard deviation was recorded at 1.20, so stress experiences were distributed more widely across respondents. A positive skewness value was observed, which implied that lower stress levels were more common, while some respondents still reported higher stress.

Figure 2

Boxplots of variables
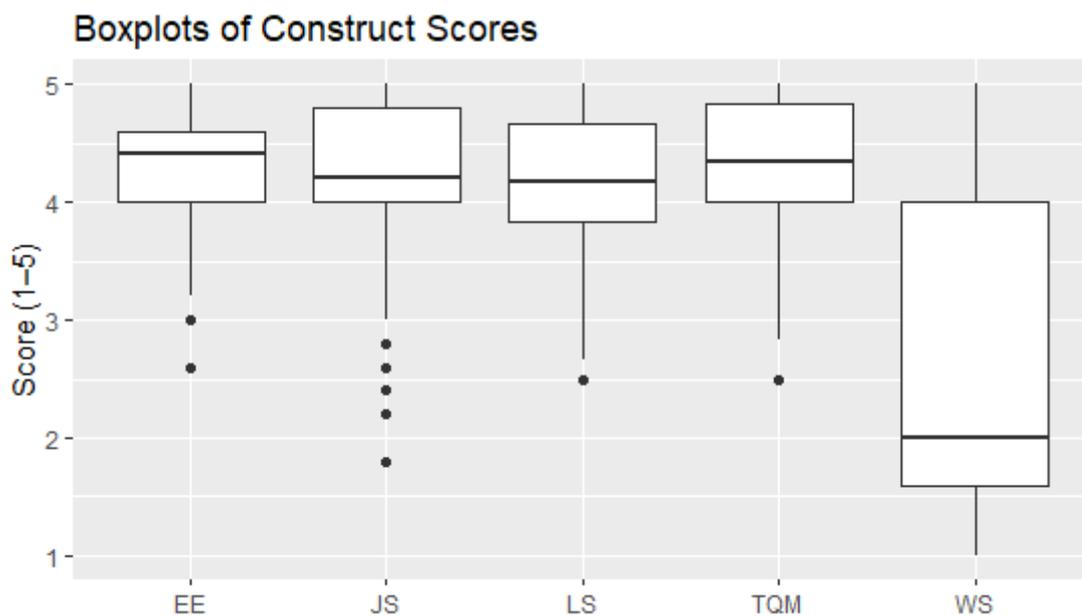
Source: author's construction.

The boxplots (Figure 2) suggested that Leadership Style, Employee Involvement in TQM, Job Satisfaction, and Employee Engagement were rated at consistently high levels. Median values were positioned above 4.0 for all four

constructs, and the boxes were relatively narrow. A limited spread was therefore indicated, so many respondents were grouped around agreement. A few lower outliers were still visible, especially for Job Satisfaction and Leadership Style, so negative experiences were not fully absent. Yet, the dominant pattern was placed near the upper part of the scale, which also signaled that strong disagreement was rare in the sample.

A different picture was indicated for Workplace Stress. The median was located close to 2.0, and a much wider box and longer whiskers were shown. A larger variability was therefore reflected for stress compared to the other constructs. In practical terms, a more mixed experience of stress was suggested, since both low stress and high stress levels were represented. The upper whisker also reached close to 5.0, so a subgroup with very high stress was captured.

Figure 3

Histogram of frequency distribution of variables
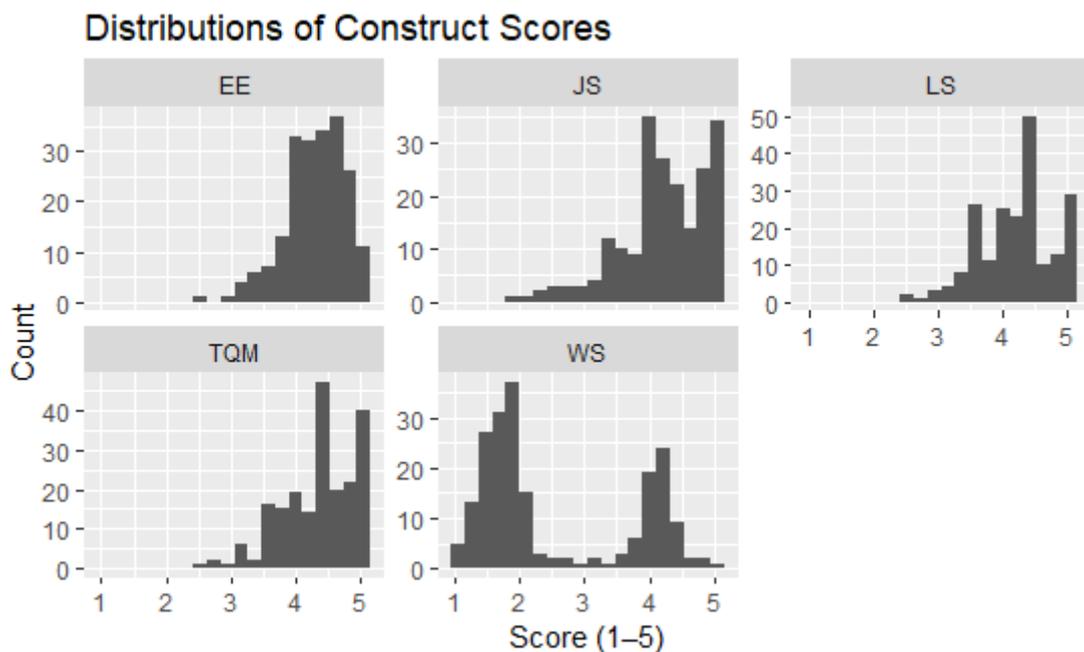
Source: author's construction.

The distribution plots (Figure 3) reinforced the same interpretation. For Employee Engagement and Employee Involvement in TQM, responses were heavily concentrated between 4 and 5, and the right side of the scale was used more frequently. A ceiling tendency was therefore suggested, because the maximum score was reached by many respondents. For Job Satisfaction and Leadership Style, a similar

concentration near 4–5 was shown, although slightly more spread was visible, especially for Job Satisfaction. It can be inferred that satisfaction varied more across respondents than engagement, even though overall evaluations were still positive.

3.3 Correlation analysis

Table 6 below summarizes information about the correlation analysis.

Table 6

Correlation matrix of construct scores (Pearson)

	LS	TQM	JS	EE	WS
LS	1.000	0.614	0.639	0.404	-0.544
TQM	0.614	1.000	0.582	0.456	-0.278
JS	0.639	0.582	1.000	0.492	-0.418
EE	0.404	0.456	0.492	1.000	-0.274
WS	-0.544	-0.278	-0.418	-0.274	1.000

Source: author's construction.

Clear associations were indicated among the study constructs. Leadership style was positively related to employee involvement in TQM (r = 0.614). Such a relationship supported the expectation that, when a manager is perceived as more involving and inspiring, greater quality participation is also reported. A similar positive relationship was observed between leadership style and job satisfaction (r = 0.639). It was therefore suggested that supportive leadership behaviours were linked with more positive evaluations of one's job.

Employee engagement was positively related to both leadership style and TQM involvement. The correlation between engagement and leadership style was moderate (r = 0.404), while the correlation between engagement and TQM involvement was also moderate (r = 0.456). A meaningful role of engagement was therefore implied, because engagement moved in the same direction as both the main predictor and the main outcome.

Workplace stress was negatively related to the other constructs. The strongest negative relationship was observed between stress and leadership style (r = -0.544). It was therefore suggested that, when leadership was perceived more positively, lower stress was also reported. Negative relationships were also observed between stress and job satisfaction (r = -0.418), and between stress and engagement (r = -0.274). Such

patterns were consistent with the idea that strain is associated with weaker work attitudes and lower energy.

3.4 Reliability analysis

Internal consistency was assessed with Cronbach's alpha for each construct. The results are summarised in Table 7. Strong reliability was indicated for Leadership Style, Employee Involvement in TQM, Job Satisfaction, and Workplace Stress, because alpha values were close to, or above, 0.80. A weaker reliability level was indicated for Employee Engagement, because the alpha value was below 0.70. Such a result can be linked to item consistency, because two engagement items showed weaker relationships with the engagement factor in the measurement model.

Table 7

Cronbach's alpha results

Construct	Items	Cronbach's alpha
Leadership Style (LS)	6	0.867
Employee Involvement in TQM (TQM)	6	0.844
Job Satisfaction (JS)	5	0.869
Employee Engagement (EE)	5	0.637
Workplace Stress (WS)	5	0.940

Source: author's construction.

A further check was supported by omega values, and a similar pattern was indicated, where Employee Engagement was kept as the weakest construct.

3.5 Validity analysis

Construct validity was supported through an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA). Parallel analysis suggested that five factors were appropriate for the item set, which matched the intended five-construct design.

In the EFA, variance was distributed across five factors, and about half of the total variance was explained. Such a level was treated as acceptable in many applied survey settings, because psychological and organisational constructs are rarely explained with extremely high variance shares when short Likert scales are used. At the same time, some cross-loadings were visible in the EFA output, so a cautious

interpretation was required, and the CFA results were treated as the primary evidence for item placement.

Table 8

EFA explained variance (5-factor solution)

Factor	SS loadings	Variance share	Cumulative share
1	4.066	0.151	0.151
2	3.339	0.124	0.274
3	2.461	0.091	0.365
4	2.142	0.079	0.445
5	1.306	0.048	0.493

Source: author's construction.

Item validity was then assessed using standardised CFA loadings. Strong measurement quality was indicated for Leadership Style, Job Satisfaction, and Workplace Stress, because most loadings were near 0.70 or higher. A moderate pattern was observed for the TQM involvement construct, because one item loading was below 0.60. The main weakness was observed for Employee Engagement, because two items were measured with low loadings, especially Q22 and Q20. Under such a condition, convergent validity for engagement was expected to be weaker, and reliability concerns were also supported.

Table 9

Standardised CFA loadings by item

Construct	Item	Std. loading
LS	Q1	0.846
LS	Q2	0.836
LS	Q3	0.753
LS	Q4	0.671
LS	Q5	0.611
LS	Q6	0.634
TQM	Q7	0.776
TQM	Q8	0.807
TQM	Q9	0.706
TQM	Q10	0.596

TQM	Q11	0.713
TQM	Q12	0.627
JS	Q13	0.813
JS	Q14	0.721
JS	Q15	0.768
JS	Q16	0.778
JS	Q17	0.701
EE	Q18	0.512
EE	Q19	0.766
EE	Q20	0.334
EE	Q21	0.737
EE	Q22	0.281
WS	Q23	0.780
WS	Q24	0.828
WS	Q25	0.857
WS	Q26	0.933
WS	Q27	0.948

Source: author's construction.

Average Variance Extracted (AVE) values were used to assess convergent validity at the construct level. Adequate convergent validity was indicated for Leadership Style, TQM involvement, Job Satisfaction, and Workplace Stress, because AVE values were around 0.50 or higher. A weaker result was indicated for Employee Engagement, because AVE was well below 0.50, which was consistent with the low CFA loadings and the weaker alpha level.

Table 10

AVE values

Construct	AVE
LS	0.535
TQM	0.501
JS	0.573
EE	0.316
WS	0.759

Source: author's construction.

As a result of the validity and reliability analysis, it was decided to drop Q22 belonging to the employee engagement construct. After the correction, the Cronbach alpha score for the construct and factor loadings for the employee engagement statements were improved above the accepted threshold.

3.6 Regression results

Regression analysis was conducted to test the hypothesised relationships between leadership style, employee engagement, and employee involvement in TQM, while job satisfaction and workplace stress were treated as control variables. Centred versions of the predictors were used in the models, so the intercept values were interpreted as the expected value of the dependent variable when predictors were at their sample means. Robust standard errors (HC3) were used alongside the standard OLS output, because heteroskedasticity was indicated by the Breusch Pagan tests.

Multicollinearity risk was evaluated through VIF values. All VIF statistics were below common concern thresholds, and the highest values were around 2.03. A strong distortion from multicollinearity was therefore not suggested. Heteroskedasticity was indicated in each model through significant Breusch Pagan test results, so robust estimates were treated as the main basis for inference. Residual normality tests were also significant, which was not unusual for a sample of 205 responses. Under such conditions, robust standard errors were emphasised, and the main conclusions were derived from coefficient direction, magnitude, and robust significance levels.

3.6.1   H1: The impact of leadership style on employee involvement in TQM

In the first model, employee involvement in TQM was regressed on leadership style, job satisfaction, and workplace stress. A strong and positive effect of leadership style was indicated. The coefficient for leadership style was 0.447, and strong statistical significance was indicated in both the standard output and the robust output. Job satisfaction was also positively related to involvement in TQM, and the robust results indicated a statistically significant relationship. Workplace stress was not supported as a statistically significant predictor at the 5 percent level, although a weak positive tendency was indicated at the 10 percent level.

Model fit was also assessed. About 44.6 percent of the variation in employee involvement in TQM was explained by the predictors, and the overall F test was significant. A meaningful explanatory level was therefore suggested for the first model.

Table 11

Regression results for H1 (DV: TQM involvement)

Predictor	B	Robust SE	t (robust)	p (robust)
Intercept	4.354	0.029	150.784	< .001
Leadership style (LS_c)	0.447	0.070	6.367	< .001
Job satisfaction (JS_c)	0.280	0.066	4.252	< .001
Workplace stress (WS_c)	0.051	0.031	1.672	.096

Source: author's construction.

Model fit: $R^2 = 0.446$, Adjusted $R^2 = 0.438$, $F(3, 201) = 53.93$, $p < .001$.

A practical interpretation can be stated in a simple way. When leadership style was rated one point higher around its mean level, a higher level of involvement in TQM was predicted, even when job satisfaction and stress were held constant. A similar positive pattern was indicated for job satisfaction. A weaker and uncertain pattern was reflected for stress, because robust evidence was not strong.

3.6.2 H2: The impact of leadership style on employee engagement

In the second model, employee engagement was regressed on leadership style, job satisfaction, and workplace stress. A strong positive relationship was not confirmed between leadership style and engagement. The coefficient for leadership style was positive, yet statistical significance was not reached at the 5 percent level in the robust output. Job satisfaction was identified as the main predictor of engagement, because a positive and statistically significant coefficient was reported with robust standard errors. Workplace stress was not supported as a significant predictor in the engagement model.

The model explained about 25.7 percent of the variation in engagement, and the overall model was significant. A moderate explanatory level was therefore suggested, where engagement differences were partly captured by satisfaction differences.

Table 12

Regression results for H2 (DV: Employee engagement)

Predictor	B	Robust SE	t (robust)	p (robust)
Intercept	4.290	0.027	157.855	< .001
Leadership style (LS_c)	0.104	0.064	1.623	.106
Job satisfaction (JS_c)	0.266	0.065	4.077	< .001
Workplace stress (WS_c)	-0.014	0.029	-0.480	.632

Source: author's construction.

Model fit: $R^2 = 0.257$, Adjusted $R^2 = 0.245$, $F(3, 201) = 23.11$, $p < .001$.

A clear implication was suggested. Engagement was more closely aligned with job satisfaction than with leadership style in the sample, after controls were applied. The result can be explained by the possibility that daily satisfaction elements, such as rewards and growth perceptions, were more directly tied to energy and enthusiasm at work than leadership perceptions were.

3.6.3 H3: The impact of employee engagement on employee involvement in TQM

The third model was focused on the effect of engagement on employee involvement in TQM, while leadership style, job satisfaction, and workplace stress were included as controls. A positive and statistically significant coefficient for engagement was reported, both in the standard output and under robust standard errors. Leadership style remained positive and strongly significant. Job satisfaction also remained significant with robust errors. Workplace stress was again placed near the margin of significance and was not confirmed at the 5 percent level in the robust output.

The explained variance increased slightly relative to Model 1, and about 47.1 percent of variation in TQM involvement was explained. A stronger predictive structure was therefore indicated when engagement was included together with leadership and satisfaction.

Table 13

Regression results for H3 (DV: TQM involvement)

Predictor	B	Robust SE	t (robust)	p (robust)
Intercept	4.354	0.028	153.207	< .001
Employee engagement (EE_c)	0.225	0.086	2.621	.009
Leadership style (LS_c)	0.423	0.069	6.146	< .001
Job satisfaction (JS_c)	0.220	0.070	3.147	.002
Workplace stress (WS_c)	0.054	0.030	1.809	.072

Source: author's construction.

Model fit: $R^2 = 0.471$, Adjusted $R^2 = 0.460$, $F(4, 200) = 44.48$, $p < .001$.

The results supported the idea that engagement was linked with quality participation. When higher engagement was reported, higher involvement in TQM was also predicted, even when leadership and satisfaction were held constant. At the same time, leadership style remained a strong predictor, so the role of leadership was not replaced by engagement in the model.

3.6.4 H4: Mediation model (Leadership style → Engagement → TQM involvement)

A mediation test was performed using a path model with bootstrapped standard errors. The path from leadership style to engagement was positive but not statistically significant at the 5 percent level. The path from engagement to TQM involvement was positive and statistically significant. The direct effect of leadership style on TQM involvement was also positive and statistically significant.

The indirect effect, which represented mediation through engagement, was estimated at 0.024 and was not statistically significant. The confidence interval included zero, and the p value was above 0.05. For that reason, mediation through engagement was not confirmed in the sample. At the same time, the total effect of leadership style on TQM involvement was significant, which was consistent with the regression results in Models 1 and 3.

Table 14

Mediation results with bootstrapping

Effect	Estimate	SE (bootstrap)	p	95% CI

LS → EE (a)	0.104	0.063	.095	[-0.021, 0.225]
EE → TQM (b)	0.225	0.083	.007	[0.076, 0.404]
LS → TQM (direct, c′)	0.423	0.067	< .001	[0.291, 0.551]
Indirect (a × b)	0.024	0.019	.205	[-0.004, 0.069]
Total effect	0.447	0.068	< .001	[0.309, 0.581]

Source: author's construction.

A clear conclusion was indicated. Employee engagement was associated with TQM involvement, yet engagement was not identified as the mechanism that transmitted the effect of leadership style to TQM involvement. The direct pathway from leadership style to involvement in quality activities remained the dominant relationship.

3.6.5 H5: Moderation model (Workplace stress as a moderator)

Moderation was tested by adding an interaction term between engagement and workplace stress to the TQM involvement model, while leadership style and job satisfaction were held as controls. The interaction coefficient was negative, yet statistical significance was not reached, and robust results also did not support significance. The moderation hypothesis was therefore not supported.

In the same model, engagement remained significant, and leadership style and job satisfaction also stayed significant with robust errors. Workplace stress on its own was not statistically significant at the 5 percent level. The overall model remained significant, and the explained variance was about 47.4 percent, which was close to Model 3.

Table 15

Moderation results (DV: TQM involvement)

Predictor	B	Robust SE	t (robust)	p (robust)
Intercept	4.344	0.030	146.306	< .001
Employee engagement (EE_c)	0.230	0.090	2.565	.011
Workplace stress (WS_c)	0.048	0.029	1.618	.107
EE × WS interaction	-0.065	0.071	-0.913	.362
Leadership style (LS_c)	0.420	0.069	6.120	< .001
Job satisfaction (JS_c)	0.218	0.071	3.088	.002

Model fit: $R^2 = 0.474$, Adjusted $R^2 = 0.461$, $F(5, 199) = 35.89$, $p < .001$.

A plausible interpretation can be provided. Even though stress was expected to weaken the role of engagement for quality involvement, such weakening was not supported by the interaction test. The relationship between engagement and involvement in TQM was therefore treated as relatively stable across different stress levels in the sample, at least within the limits of the measured data.

3.7   Hypotheses results and findings

Results were summarised to clarify which relationships were supported.

Table 16

Hypotheses summary

Hypothesis	Relationship	Result
H1	Leadership style → TQM involvement	Supported
H2	Leadership style → Engagement	Not supported
H3	Engagement → TQM involvement	Supported
H4	Engagement mediates LS → TQM involvement	Not supported
H5	Stress moderates Engagement → TQM involvement	Not supported

Strong evidence was provided for the direct effect of leadership style on employee involvement in TQM, and additional evidence was provided for the independent role of engagement in explaining involvement in quality activities. Mediation and moderation were not confirmed, since the indirect pathway and the interaction term were not statistically supported under bootstrapped and robust testing.

The study aim was set around the explanation of employee involvement in TQM practices through leadership style and employee engagement, while job satisfaction and workplace stress were treated as additional conditions. The findings were interpreted through five research questions. A consistent pattern was indicated in the results. Leadership style was strongly related to employee involvement in TQM. Employee engagement was also related to employee involvement in TQM. Yet, employee engagement was not supported as the main pathway that transmitted the effect of leadership style to involvement, because the leadership to engagement link was not statistically supported after controls were included. Workplace stress was not supported as a moderator of the engagement to involvement relationship.

A positive and statistically significant relationship was confirmed between leadership style and employee involvement in TQM practices. When leadership style

increased around its mean, involvement in quality activities was predicted at a higher level, even when job satisfaction and workplace stress were held constant. The size of the effect was also meaningful, because leadership remained significant when additional predictors were added in later models.

Such a result was aligned with prior research where leadership was positioned as a key driver of quality management practices. A similar pattern was reported in the quality management context, where leadership was linked with the implementation of TQM practices and people focused quality activities (Laohavichien et al., 2011). In a later study, transformational leadership was also connected with the use of TQM practices, especially in areas related to participation and improvement culture (Bouranta, 2021). Support was also provided in comparative research, where leadership style differences were associated with differences in TQM practice strength (Cho & Jung, 2014). In the present study, a similar logic was suggested. When managerial behaviours were perceived as involving and encouraging, a stronger willingness to identify problems, suggest improvements, and join quality activities was reported.

A further point was indicated by the descriptive results. Both leadership style and TQM involvement were rated at high levels, so agreement was common in the sample. Even under such high means, an effect was still observed. The relationship was therefore not explained only by general positivity in responses. Instead, a practical mechanism was implied, where leadership behaviours were linked with the daily experience of participation opportunities and recognition for improvement effort.

The relationship between leadership style and employee engagement was not supported at the 5 percent significance level once job satisfaction and workplace stress were controlled. A positive coefficient was still estimated, so a supportive direction was suggested, yet the evidence was not strong enough for a clear conclusion. Job satisfaction was identified as the strongest predictor of engagement in the model.

A contrast with many past studies was therefore indicated. Daily research has shown that transformational leadership is associated with work engagement and day level motivation, because leadership signals can shape energy and dedication during work (Breevaart et al., 2014). A broader review also described engagement as a state that is supported through resources, meaning, and supportive leadership climates

(Decuypere & Schaufeli, 2021). Under such literature, a stronger leadership to engagement link was expected.

Several explanations were considered for the weaker relationship in the present results. First, job satisfaction was entered as a control, and a strong association between satisfaction and engagement was supported. A meta analytic pattern was also reported, where engagement shows strong overlap with positive job attitudes, including satisfaction (Mazzetti et al., 2023). Under such overlap, the incremental contribution of leadership in the engagement model can be reduced, because variance shared by leadership and engagement can be carried through satisfaction. Second, engagement scores were placed near the upper end of the scale with relatively low dispersion. Under limited variance, statistical detection of smaller effects can be reduced. Third, engagement measurement was not fully strong in reliability and validity checks, which can also weaken observed relationships.

Workplace stress was not significant in the engagement regression model, although a negative correlation was observed at the bivariate level. A JD R interpretation could be offered. Job demands are linked with strain, while resources are linked with motivation and engagement (Bakker & Demerouti, 2017). When satisfaction and leadership perceptions are strong, resource conditions may be perceived as sufficient, and stress can become less predictive of engagement after controls are included.

A positive and statistically significant relationship was confirmed between employee engagement and employee involvement in TQM practices. When engagement increased, involvement in quality activities was predicted at a higher level, while leadership, satisfaction, and stress were held constant. The finding suggested that energetic and dedicated employees were more willing to participate in improvement routines and problem-solving behaviours.

Support for that logic was found in past research on engagement and performance. Engagement was linked with task and contextual performance, where contextual performance reflects extra contribution beyond formal job requirements (Christian et al., 2011). In quality contexts, such extra contribution can be translated into participation in improvement activities. More direct support was also provided in a study where work engagement was positively related to TQM practices in an

industrial organisation (Boikanyo & Heyns, 2019). Although the context differed, a similar behavioural link was indicated.

An additional result was also important. Leadership style remained significant in the involvement model even after engagement was added. For that reason, a single explanation through engagement was not suggested. A dual route was implied. A direct leadership route was supported, where leadership behaviours enabled involvement through participation structures and encouragement. A motivational route was also supported, where engagement created energy for improvement effort. Both routes were shown as relevant.

Mediation through engagement was not supported. The indirect effect was not significant, and the confidence interval included zero. The reason was located in the weak leadership to engagement path, because mediation requires a significant a path and a significant b path. The b path from engagement to involvement was supported, yet the a path from leadership to engagement was not supported at conventional levels under the model.

A contrast was suggested with leadership performance research where engagement is often identified as a transmission mechanism. Daily transformational leadership was connected with engagement and performance outcomes in prior work (Breevaart et al., 2014). In leadership reviews, engagement has also been positioned as a pathway through resource creation and positive climate (Decuypere & Schaufeli, 2021). However, the dependent variable in the present model was not general performance. The dependent variable was involvement in TQM practices, which is closely tied to participation opportunities and local improvement routines. It can therefore be argued that involvement can be influenced directly by leadership behaviours, even when engagement is not strongly changed. For example, involvement in decisions, feedback on improvement outcomes, and encouragement of ideas can directly support quality participation.

Moderation by workplace stress was not supported. The interaction term between engagement and stress was not significant. The impact of engagement on involvement in TQM was therefore interpreted as relatively stable across stress levels in the sample.

A moderation expectation was still reasonable in theory, because stress is linked with strain and reduced extra effort over time, while engagement is linked with energetic contribution (Bakker & Demerouti, 2017). Leadership is also linked with stress related outcomes and well being patterns in meta analytic evidence (Harms et al., 2017). Yet, the present results did not show that stress changed the engagement to involvement relationship. A possible explanation was suggested by the stress distribution, where wide variability was observed. Under such variability, the interaction may require a larger sample or more precise stress measurement to be detected.

Several theoretical implications were indicated. First, strong support was provided for leadership as an antecedent of employee involvement in TQM, which reinforced the view that soft TQM is shaped through leadership behaviours and participation climates (Laohavichien et al., 2011; Bouranta, 2021). Second, engagement was supported as a direct predictor of TQM involvement. A stronger integration between engagement research and quality management research was therefore encouraged, because engagement can explain why some employees contribute more actively to continuous improvement (Boikanyo & Heyns, 2019; Christian et al., 2011). Third, a boundary condition was suggested for leadership to engagement relationships when job satisfaction is controlled and engagement variance is limited. Such a nuance was consistent with evidence that engagement is strongly connected to broader job attitude evaluations (Mazzetti et al., 2023).

CONCLUSIONS AND RECOMMENDATIONS

The following summarizes the main conclusions of this thesis:

1. In the literature, TQM is framed as a hard and soft system, and a similar logic is supported empirically, because leadership style is identified as a strong predictor of employee involvement in TQM practices.

2. In the literature, employee related mechanisms are treated as important for quality results, and the analysis supports that view, because employee engagement is identified as a positive predictor of involvement.

3. Indirect explanation through engagement is not supported in the tested model, because the leadership style to engagement relationship is not statistically supported after controls are added.

4. A conditioning role of workplace stress is not supported, because the engagement to involvement relationship is not shown as significantly different across stress levels in the sample.

5. Job satisfaction is indicated as a key supportive condition for engagement and involvement, so quality participation is suggested to be strengthened through both leadership actions and broader job quality conditions.

Recommendations were derived directly from the supported relationships.

1. A stronger emphasis should be placed on leadership behaviours that support participation in improvement work. Quality expectations should be communicated clearly, employee input should be invited, and improvement ideas should be recognised. When such signals are given consistently, involvement in TQM activities is more likely to be strengthened.

2. Formal participation mechanisms should be reinforced. Regular improvement meetings, small problem solving groups, and feedback loops on improvement outcomes should be established. When feedback is provided, a clearer link is created between effort and results, and involvement can be normalised as part of daily work.

3. Job satisfaction drivers should be reviewed as supportive conditions. Fair reward perceptions, development opportunities, and organisational support

should be improved, because satisfaction was linked to both engagement and involvement in the models.

4. Stress management should be treated as a preventive action even though moderation was not supported. Workload planning, role clarity, and recovery practices should be strengthened, because stress variation was wide and a subgroup reported high stress.

Several limitations were recognised:

1. A cross-sectional design was used, so causal direction could not be confirmed. Longitudinal or diary research could be used in the future, because daily leadership actions and daily engagement can be captured more precisely.

2. Nonprobability sampling was used, so generalisation across sectors and organisational levels was limited. A stratified sampling strategy could be applied in future studies to improve representativeness.

3. Self-report measures were used, so common method bias risk was present. Multi source data could be collected in future research, such as supervisor ratings of quality participation or objective indicators of improvement involvement when available.

4. Measurement limitations were also indicated for employee engagement. A longer engagement scale and pre testing of items could be used to strengthen reliability and to increase variance.

5. Future research could also examine contextual moderators that were not tested, such as industry type, organisational size, or quality maturity. Additional mechanisms could be explored as well. Psychological empowerment, trust, and perceived organisational support can be tested as alternative mediators, because leadership may influence involvement through structural and relational pathways.

LITERATURE AND REFERENCES

Albrecht, S. L., Bakker, A. B., Gruman, J. A., Macey, W. H., & Saks, A. M. (2015). Employee engagement, human resource management practices and competitive advantage: An integrated approach. *Journal of Organizational Effectiveness: People and Performance, 2*(1), 7–35. https://doi.org/10.1108/JOEPP-08-2014-0042

Ali, K., & Johl, S. K. (2022). Soft and hard TQM practices: Future research agenda for Industry 4.0. *Total Quality Management & Business Excellence, 33*(13–14), 1625–1655. https://doi.org/10.1080/14783363.2021.1985448

Ali, K., Johl, S. K., Muneer, A., Alwadain, A., & Ali, R. F. (2022). Soft and hard total quality management practices promote Industry 4.0 readiness: A SEM-neural network approach. *Sustainability, 14*(19), 11917. https://doi.org/10.3390/su141911917

Alkhaldi, M., & Abdallah, A. B. (2021). The influence of soft and hard TQM on quality performance and patient satisfaction in health care: Investigating direct and indirect effects. *Journal of Health Organization and Management*. Advance online publication. https://doi.org/10.1108/JHOM-10-2020-0416

American Society for Quality. (n.d.). *Total quality management (TQM): What is TQM?* American Society for Quality (ASQ). https://asq.org/quality-resources/total-quality-management

Aquilani, B., Silvestri, C., Ruggieri, A., & Gatti, C. (2017). A systematic literature review on total quality management critical success factors and the identification of new avenues of research. *The TQM Journal, 29*(1), 184–213. 10.1108/TQM-01-2016-0003

Asif, M., de Bruijn, E. J., Douglas, A., & Fisscher, O. A. M. (2009). Why quality management programs fail: A strategic and operations management perspective. *International Journal of Quality & Reliability Management, 26*(8), 778–794.

Bailey, C., Madden, A., Alfes, K., & Fletcher, L. (2017). The meaning, antecedents and outcomes of employee engagement: A narrative synthesis. *International Journal of Management Reviews, 19*(1), 31–53. https://doi.org/10.1111/ijmr.12077

Baird, K., Hu, K. J., & Reeve, R. (2011). The relationships between organizational culture, total quality management practices and operational performance. *International*

Journal of Operations & Production Management, 31(7), 789–814. https://doi.org/10.1108/01443571111144850

Bakker, A. B., & Albrecht, S. (2018). Work engagement: Current trends. *Career Development International, 23*(1), 4–11. https://doi.org/10.1108/CDI-11-2017-0207

Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology, 22*(3), 273–285. https://doi.org/10.1037/ocp0000056

Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York, NY: Free Press.

Bass, B. M., & Avolio, B. J. (1995). *MLQ: Multifactor Leadership Questionnaire manual*. Mind Garden.

Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Bayo-Moriones, A., & de la Torre, R. (2021). Analysing the relationship between QM, performance appraisal and pay for performance. *Total Quality Management & Business Excellence*. Advance online publication. https://doi.org/10.1080/14783363.2021.1933422

Beer, M. (2003). Why total quality management programs do not persist: The role of management quality and implications for leading a TQM transformation. *Decision Sciences, 34*(4), 623–642. https://doi.org/10.1111/j.1540-5414.2003.02640.x

Boikanyo, D. H., & Heyns, M. M. (2019). The effect of work engagement on total quality management practices in a petrochemical organisation. *South African Journal of Economic and Management Sciences, 22*(1), a2334. https://doi.org/10.4102/sajems.v22i1.2334

Boiral, O. (2007). Corporate greening through ISO 14001: A rational myth? *Organization Science, 18*(1), 127–146. https://doi.org/10.1287/orsc.1060.0224

Bouranta, N. (2021). Does transformational leadership influence TQM practices? A comparison analysis between manufacturing and service firms. *The TQM Journal, 33*(9), 71–94. https://doi.org/10.1108/TQM-12-2019-0296?urlappend=%3Futm_source%3Dresearchgate.net%26utm_medium%3Darticle

Breevaart, K., Bakker, A. B., Demerouti, E., & Derks, D. (2014). Daily transactional and transformational leadership and daily employee engagement. *Journal of Occupational and Organizational Psychology, 87*(1), 138–157. https://www.isonderhouden.nl/doc/pdf/arnoldbakker/articles/articles_arnold_bakker_343.pdf

Burns, J. M. (1978). *Leadership*. New York, NY: Harper & Row.

Cai, M., Wang, M., & Cheng, J. (2024). The effect of servant leadership on work engagement: The role of employee resilience and organizational support. *Behavioral Sciences, 14*(4), 300. https://doi.org/10.3390/bs14040300

Canavesi, A., & Minelli, E. (2022). Servant leadership and employee engagement: A qualitative study. *Employee Responsibilities and Rights Journal, 34*, 413–435. https://doi.org/10.1007/s10672-021-09389-9

Casprini, E., Pucci, T., Fiorini, N., & Zanni, L. (2023). Blending "hard" and "soft" TQM for academic excellence: The University of Siena experience in the field of Life Sciences. *The TQM Journal, 35*(9), 231–255. https://usiena-air.unisi.it/retrieve/306fb120-db3d-4d43-9265-7062251c93f9/2023%20TQM%20Casprini%2C%20Pucci%2C%20Fiorini%2C%20Zanni.pdf

Cavallone, M., & Palumbo, R. (2021). Delving into the soft side of TQM: An analysis of the implications of employee involvement on management practices. *The TQM Journal, 34*(5), 1096–1115. https://doi.org/10.1108/TQM-05-2021-0148

Cho, Y. S., & Jung, J. Y. (2014). The verification of effective leadership style for TQM: A comparative study between USA-based firms and China-based firms. *International Journal of Quality & Reliability Management, 31*(7), 822–840. http://dx.doi.org/10.1108/IJQRM-04-2013-0065

Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology, 64*(1), 89–136. https://psycnet.apa.org/doi/10.1111/j.1744-6570.2010.01203.x

Chughtai, M. S., et al. (2023). Role of adaptive leadership in learning organizations to foster organizational innovations. *Frontiers in Psychology.* https://doi.org/10.1007/s12144-023-04669-z

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. https://psycnet.apa.org/doi/10.2307/2136404

De Koeijer, R., Strating, M. M. H., Paauwe, J., & Huijsman, R. (2024). A balanced approach involving hard and soft factors for internalizing lean management and Six Sigma in hospitals. *The TQM Journal, 36*(3), 870–899. https://doi.org/10.1108/TQM-01-2022-0031

Decuypere, A., & Schaufeli, W. (2020). Leadership and work engagement: Exploring explanatory mechanisms. *German Journal of Human Resource Management, 35*(1), 69–95. https://doi.org/10.1177/2397002219892197

Decuypere, A., & Schaufeli, W. B. (2021). Exploring the leadership–engagement nexus: A moderated meta-analysis and review of explaining mechanisms. *International Journal of Environmental Research and Public Health, 18*(16), 8592. https://doi.org/10.3390/ijerph18168592

Deming, W. E. (1986). *Out of the crisis*. Cambridge, MA: MIT Press.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed.). SAGE Publications.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Wiley.

Douglas, T. J., & Judge, W. Q. (2001). Total quality management implementation and competitive advantage: The role of structural control and exploration. *Academy of Management Journal, 44*(1), 158–169. https://psycnet.apa.org/doi/10.2307/3069343

Escrig-Tena, A. B., Segarra-Ciprés, M., García-Juan, B., & Beltrán-Martín, I. (2018). The impact of hard and soft quality management and proactive behaviour in determining innovation performance. *International Journal of Production Economics, 200*, 1–14. https://doi.org/10.1016/j.ijpe.2018.03.011

Eva, N., Robin, M., Sendjaya, S., van Dierendonck, D., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly, 30*(1), 111–132. https://doi.org/10.1016/j.leaqua.2018.07.004

Filippi, E., Gaio, L., & Zamarian, M. (2023). Leveraging the hard and soft elements of TQM: The interplay of benchmarking and improvement processes. *The TQM Journal, 36*(3), 702–719. https://doi.org/10.1108/TQM-01-2022-0045

Flynn, B. B., Schroeder, R. G., & Sakakibara, S. (1994). A framework for quality management research and an associated measurement instrument. *Journal of Operations Management, 11*(4), 339–366. https://doi.org/10.1016/S0272-6963(97)90004-8

Fundin, A., Elg, M., Bergquist, B., & Eriksson, H. (2024). Positions and transformations on the quality culture continuum motivated by organisational values. *Journal of Organizational Change Management, 38*(8), 176-203. https://doi.org/10.1108/JOCM-12-2024-0816

Galeazzo, A., Furlan, A., & Vinelli, A. (2021). The role of employees' participation and managers' authority on continuous improvement and performance. *International Journal of Operations & Production Management, 41*(13), 34–63. https://doi.org/10.1108/IJOPM-07-2020-0482

Gambi, L. D. N., Boer, H., Jorgensen, F., Gerolamo, M. C., & Carpinetti, L. C. R. (2022). The effects of HRM approach on quality management techniques and performance. *Total Quality Management & Business Excellence, 33*(7–8), 833–861. https://doi.org/10.1080/14783363.2021.1903308

Goetsch, D. L., & Davis, S. B. (2016). *Quality management for organizational excellence: Introduction to total quality* (8th ed.). Pearson.

Greenleaf, R. K. (1977). *Servant leadership: A journey into the nature of legitimate power and greatness*. New York, NY: Paulist Press.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage.

Harms, P. D., Credé, M., Tynan, M., Leon, M., & Jeung, W. (2017). Leadership and stress: A meta-analytic review. *The Leadership Quarterly, 28*(1), 178–194. https://doi.org/10.1016/j.leaqua.2016.10.006

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.

Heifetz, R. A., Grashow, A., & Linsky, M. (2009). *The practice of adaptive leadership: Tools and tactics for changing your organization and the world.* Harvard Business Press.

International Organization for Standardization. (2015). *ISO 9001:2015 Quality management systems — Requirements*. Geneva, Switzerland: ISO.

Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology, 89*(5), 755–768. https://doi.org/10.1037/0021-9010.89.5.755

Kumar, V., & Sharma, R. R. K. (2018). Leadership styles and their relationship with TQM focus for Indian firms. *International Journal of Productivity and Performance Management, 67*(6), 1063–1088. https://doi.org/10.1108/IJPPM-03-2017-0071

Laohavichien, T., Fredendall, L. D., & Cantrell, R. S. (2011). Leadership and quality management practices in Thailand. *International Journal of Operations & Production Management, 31*(10), 1048–1070. https://doi.org/10.1108/01443571111172426

Lesener, T., Gusy, B., & Wolter, C. (2020). The drivers of work engagement: A meta-analytic review of longitudinal evidence. *Work & Stress, 34*(3), 259–278. https://doi.org/10.1080/02678373.2019.168 6440

Liu, M., et al. (2022). How and When Does Visionary Leadership Promote Followers' Taking Charge? The Roles of Inclusion of Leader in Self and Future Orientation. *Frontiers in Psychology.* https://doi.org/10.2147/PRBM.S366939

Mazzetti, G., Schaufeli, W. B., & Guglielmi, D. (2023). Work engagement: A meta-analysis using the Job Demands–Resources model. *Psychological Reports, 126*(3), 1069–1107. https://doi.org/10.1177/00332941211051988

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology, 83*(2), 340–363. http://dx.doi.org/10.1086/226550

Mosadeghrad, A. M. (2014). Essentials of total quality management: A meta-analysis. *International Journal of Health Care Quality Assurance, 27*(6), 544–558. https://doi.org/10.1108/IJHCQA-07-2013-0082

Oakland, J. S. (2014). *Total quality management and operational excellence: Text with cases* (4th ed.). London: Routledge.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539–569. https://psycnet.apa.org/doi/10.1146/annurev-psych-120710-100452

Psomas, E. L., & Jaca, C. (2016). The impact of total quality management on service company performance: Evidence from Spain. *International Journal of Quality & Reliability Management, 33*(3), 380-398. https://doi.org/10.1108/IJQRM-07-2014-0090?urlappend=%3Futm_source%3Dresearchgate.net%26utm_medium%3Darticle

Rahal, F. E. Z. M. (2022). Does servant leadership stimulate work engagement in the workplace? The mediating role of trust in leader. *Sustainability, 14*(24), 16528. https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2022.925732/full

Sadikoglu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International Journal of Production Economics, 127*(1), 13–26. https://doi.org/10.1016/j.ijpe.2010.02.013

Sagie, A. (1994). Participative decision making and performance: A meta-analysis. *Journal of Applied Behavioral Science, 30*(2), 227–246. https://psycnet.apa.org/doi/10.1177/0021886394302006

Saks, A. M., & Gruman, J. A. (2014). What do we really know about employee engagement? *Human Resource Development Quarterly, 25*(2), 155–182. https://doi.org/10.1002/hrdq.21187

Saraph, J. V., Benson, P. G., & Schroeder, R. G. (1989). An instrument for measuring the critical factors of quality management. *Decision Sciences, 20*(4), 810–829. https://doi.org/10.1111/j.1540-5915.1989.tb01421.x

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two-sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*(1), 71–92. https://psycnet.apa.org/doi/10.1023/A:1015630930326

Schaufeli, W. B., Shimazu, A., Hakanen, J., Salanova, M., & De Witte, H. (2019). An ultra-short measure for work engagement: The UWES-3 validation across five countries. *European Journal of Psychological Assessment, 35*(4), 577–591. https://doi.org/10.1027/1015-5759/a000430

Schyns, B., & Schilling, J. (2013). How bad are the effects of bad leaders? A meta-analysis of destructive leadership and its outcomes. *The Leadership Quarterly, 24*(1), 138–158. https://doi.org/10.1016/j.leaqua.2012.09.001

Sciarelli, M., Gheith, M. H., & Tani, M. (2020). The relationship between soft and hard quality management practices, innovation and organizational performance in higher education. *The TQM Journal, 32*(6), 1349–1372. https://doi.org/10.1108/TQM-01-2020-0014

Skogstad, A., Einarsen, S., Torsheim, T., Aasland, M. S., & Hetland, H. (2007). The destructiveness of laissez-faire leadership behavior. *Journal of Occupational Health Psychology, 12*(1), 80–92. https://doi.org/10.1037/1076-8998.12.1.80

Sousa, R., & Voss, C. A. (2002). Quality management re-visited: A reflective review and agenda for future research. *Journal of Operations Management, 20*(1), 91–109. https://doi.org/10.1016/S0272-6963(01)00088-2

Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the Job Satisfaction Survey. *American Journal of Community Psychology, 13*(6), 693–713. https://psycnet.apa.org/doi/10.1007/BF00929796

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53–55. https://pmc.ncbi.nlm.nih.gov/articles/PMC4205511/

Toufighi, S. P., et al. (2024). Participative leadership, cultural factors, and speaking-up behavior: Evidence from supplier development initiatives. *Journal of Industrial and Business Economics.* https://www.econstor.eu/bitstream/10419/327450/1/S2444569X24000878.pdf

van Assen, M. F. (2021). Training, employee involvement and continuous improvement: The moderating effect of a common improvement method. *Production Planning & Control, 32*(2), 132–144. https://doi.org/10.1080/09537287.2020.1716405

van Dierendonck, D. (2011). Servant leadership: A review and synthesis. *Journal of Management, 37*(4), 1228–1261. https://psycnet.apa.org/doi/10.1177/0149206310380462

Wang, L., et al. (2024). The Process of Visionary Leadership Increases Innovative Performance among IT Industry 4.0 for SMEs for Organizational Sustainability: Testing the Moderated Mediation Model. *Sustainability, 16*(19), 8690. https://doi.org/10.3390/su16198690

Wang, Q., et al. (2022). Participative leadership: A literature review and prospects for future research. *Frontiers in Psychology.* https://doi.org/10.3389/fpsyg.2022.924357

Wang, Z., & Meckl, R. (2022). Prioritising critical success factors of total quality management in autonomous driving business models: A comparison between Germany and China. *Cogent Business & Management, 9*(1), 2016096. https://doi.org/10.1080/23311975.2021.2016096

Weiss, D. J., Dawis, R. V., England, G. W., & Lofquist, L. H. (1967). *Manual for the Minnesota Satisfaction Questionnaire*. University of Minnesota. https://psycnet.apa.org/record/1968-08111-001

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 73*(6), 913–934. https://doi.org/10.1177/0013164413495237

Xu, L., Chen, H., & Tai, J. (2020). Quality management theory development via meta-analysis. *International Journal of Production Economics, 229*, 107758. 10.1016/j.ijpe.2020.107759

Yukl, G. (2013). *Leadership in organizations* (8th ed.). Boston, MA: Pearson.

Zehir, S., Zehir, C., & Zehir, B. (2023). Effects of total quality management practices on financial and operational performance of hospitals. *Sustainability, 15*(21), 15430. https://doi.org/10.3390/su152115430

Zeng, J., Phan, C. A., & Matsui, Y. (2015). The impact of hard and soft quality management on quality and innovation performance: An empirical study. *International Journal of Production Economics, 162*, 216–226. doi:10.1016/j.ijpe.2014.07.006

Zheng, S. & Li, L. (2024). Navigating the double-edged sword: How and when laissez-faire leadership affects Employees' challenging behavior. *Acta Psychologica, 250*. https://doi.org/10.1016/j.actpsy.2024.104549

Zhou, G., Yang, Y., & Liu, Y. (2022). Does servant leadership stimulate work engagement in the workplace? The moderating role of trust in the leader. *Frontiers in Psychology, 13*, 925732. https://doi.org/10.3389/fpsyg.2022.925732

THE INFLUENCE OF LEADERSHIP STYLE ON EMPLOYEE ENGAGEMENT AND INVOLVEMENT IN TOTAL QUALITY MANAGEMENT

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Thesis

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SUMMARY

62 pages, 3 figures, 16 tables, 89 references.

An empirical study was conducted to examine the relationship between leadership style and employee involvement in Total Quality Management (TQM) practices, while employee engagement was evaluated as a potential mediating factor. A research gap was addressed because leadership and TQM were often examined through direct effects, while the role of employee engagement as an explanatory mechanism for quality participation was less clearly tested in a single model. Practical importance was also indicated, since many organizations rely on employee involvement in improvement activities, yet consistent involvement is not always sustained when leadership support and motivational conditions are weak.

A quantitative cross-sectional design was applied. Primary data were collected through a structured Google Forms questionnaire, and 205 usable responses were obtained. Leadership style was measured with six items focusing on vision communication, inspirational emphasis on values, encouragement of improvement ideas, involvement in decision making, individualized support, and recognition. Employee involvement in TQM practices was measured with six items reflecting participation in problem identification, quality improvement activities, seriousness of suggestions, authority for small process changes, feedback on improvement results, and the normalization of quality improvement as part of work. Employee engagement, job satisfaction, and workplace stress were also measured with multi item Likert scales. Descriptive statistics and distribution checks were used so that the response patterns were

summarized. Reliability analysis and factor based validity checks were conducted so that internal consistency and measurement structure were evaluated. Correlation analysis was also applied to observe directional associations among the main study variables. Regression based models were then used to test the direct effects, while mediation was evaluated through indirect effect estimation. A moderation test was also applied so that the conditional role of workplace stress in the engagement to TQM involvement relationship was examined.

A positive pattern was reflected in leadership style perceptions, employee engagement, job satisfaction, and employee involvement in TQM, while workplace stress was reported at a lower average level. Strong positive relationships were indicated between leadership style and employee involvement in TQM practices, and a positive relationship was also indicated between employee engagement and TQM involvement. Negative relationships were observed between workplace stress and the positive constructs, which suggested that higher stress was associated with lower engagement and weaker involvement tendencies. A plotted conditional effect suggested that the engagement to involvement relationship remained positive across low, average, and high stress levels, while only small differences were shown across the stress conditions. Overall, the findings suggested that involvement in TQM practices was supported through leadership behaviors that encourage participation and through employee psychological investment in work. Managerial implications were therefore emphasized, since stronger quality involvement was linked with supportive leadership and sustained engagement rather than only with formal quality systems.

Keywords: Total Quality Management (TQM); leadership style; employee involvement; employee engagement; job satisfaction; workplace stress; mediation

LYDERYSTĖS STILIAUS ĮTAKA DARBUOTOJŲ ĮSITRAUKIMUI IR DALYVAVIMUI VISAPUSIŠKAME KOKYBĖS VALDYME

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SANTRAUKA

62 puslapių, 3 paveikslai, 16 lentelių, 89 šaltinis.

Buvo atliktas empirinis tyrimas, kuriuo buvo siekiama įvertinti ryšį tarp vadovavimo stiliaus ir darbuotojų įsitraukimo į Total Quality Management (TQM) praktikas, o darbuotojų įsitraukimas į darbą buvo nagrinėjamas kaip galimas tarpinis veiksnys. Tyrimo spraga buvo siejama su tuo, kad vadovavimas ir TQM dažnai buvo analizuojami per tiesioginius poveikius, o darbuotojų įsitraukimo į darbą vaidmuo, kaip aiškinamasis mechanizmas, rečiau buvo testuojamas viename modelyje. Praktinė svarba taip pat buvo pabrėžta, nes daugelyje organizacijų kokybės gerinimo veiklos priklauso nuo darbuotojų dalyvavimo, tačiau nuoseklus dalyvavimas ne visada yra išlaikomas, kai vadovų parama ir motyvacinės sąlygos yra silpnos.

Buvo taikytas kiekybinis skerspjūvio dizainas. Pirminiai duomenys buvo surinkti naudojant struktūruotą Google Forms klausimyną, o tinkamų analizei atsakymų skaičius sudarė 205. Vadovavimo stilius buvo matuotas šešiais teiginiais, kurie apėmė vizijos komunikavimą, įkvepiantį vertybių akcentavimą, idėjų skatinimą, įtraukimą į sprendimų priėmimą, individualią paramą ir pripažinimą. Darbuotojų įsitraukimas į TQM praktikas buvo matuotas šešiais teiginiais, atspindinčiais problemų identifikavimą, dalyvavimą kokybės gerinimo veiklose, pasiūlymų vertinimą, teisę atlikti nedidelius procesų pakeitimus, grįžtamąjį ryšį apie iniciatyvų rezultatus ir kokybės gerinimo normalizavimą kasdienėje veikloje. Darbuotojų įsitraukimas į darbą, pasitenkinimas darbu ir darbo vietos stresas taip pat buvo vertinami kelių teiginių Likerto skalėmis. Pirmiausia buvo apskaičiuota aprašomoji statistika ir patikrintos pasiskirstymo formos, kad būtų apibendrinti atsakymų modeliai. Vėliau

buvo atlikta patikimumo analizė ir faktoriniai validumo patikrinimai, kad būtų įvertintas matavimų nuoseklumas ir struktūra. Taip pat buvo taikyta koreliacinė analizė. Tiesioginiams ryšiams testuoti buvo naudoti regresiniai modeliai, o mediacija buvo vertinta per netiesioginių efektų įvertinimą. Moderacija buvo tikrinama siekiant įvertinti, ar darbo vietos stresas keičia ryšį tarp įsitraukimo į darbą ir įsitraukimo į TQM.

Buvo nustatyta teigiama tendencija, kai vadovavimo stilius, įsitraukimas į darbą, pasitenkinimas darbu ir įsitraukimas į TQM buvo vertinami aukštesniais balais, o darbo vietos stresas vidutiniškai buvo mažesnis. Stiprūs teigiami ryšiai buvo nustatyti tarp vadovavimo stiliaus ir įsitraukimo į TQM, taip pat tarp įsitraukimo į darbą ir įsitraukimo į TQM. Neigiami ryšiai buvo pastebėti tarp streso ir teigiamų konstruktų. Sąlyginio poveikio grafikas parodė, kad ryšys tarp įsitraukimo į darbą ir įsitraukimo į TQM išliko teigiamas esant skirtingiems streso lygiams, o skirtumai tarp streso sąlygų buvo nedideli. Bendrai buvo padaryta išvada, kad įsitraukimas į TQM buvo labiau palaikomas per vadovavimo elgesį, kuris skatina dalyvavimą, ir per darbuotojų psichologinį investavimą į darbą, o ne vien per formalią kokybės sistemą.

Raktažodžiai: Total Quality Management (TQM); vadovavimo stilius; darbuotojų įsitraukimas į TQM; darbuotojų įsitraukimas į darbą; pasitenkinimas darbu; darbo vietos stresas; mediacija

ANNEX

Google Survey

The Influence of Leadership Style on Employee Involvement in Total Quality Management

*Indicates required question

Section A: Demographic and Background Information

What is your current role? *

Mark only one oval.

◯ Frontline employee

◯ Specialist / Analyst

◯ Supervisor / Team leader

◯ Middle manager

◯ Senior manager /

◯ Executive Other:

Which department do you mainly work in? *

Mark only one oval.

○ Operations / Production

○ Quality / TQM / Process improvement

○ HR / People Management

○ Finance / Accounting

○ Sales / Marketing / Customer service

○ IT / Digital / Data

○ Other:

How long have you been working in this organisation? *

Mark only one oval.

○ Less than 1 year

○ 1–3 years

○ 4–6 years

○ 7–10 years

○ More than 10 years

What is the size of your organisation (number of employees, approx.)? *

Mark only one oval.

○ 1–50

○ 51–200

○ 201–500

○ 501–1,000

○ More than 1,000

Which sector best describes your organisation? *

Mark only one oval.

○ Manufacturing / Industry

○ Services (e.g. banking, telecom, hospitality)

○ Public sector / Government

○ Education / Health

○ Other:

How long have you been in your current position? *

Mark only one oval.

○ Less than 1 year

○ 1–3 years

○ 4–6 years

○ More than 6 years

(Optional) Highest level of education completed: *

Mark only one oval.

○ Secondary

○ Bachelor

○ Master

○

○

Doctorate

Other:

Section B: Leadership Style

Please indicate how much you agree or disagree with each statement about your **direct manager / immediate supervisor**.

8. My manager communicates a clear vision of where the organisation is heading. *

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

9. My manager talks about values and mission in a way that inspires me. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

10. My manager encourages employees to suggest new ideas for improvement. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

11. My manager involves employees in important decisions that affect their work. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

12. My manager gives personal attention when I need coaching or support. *

Mark only one oval.

	1	2	3	4	5	
Stro	○	○	○	○	○	Strongly

agree

13. My manager recognises and praises good performance in front of others. *

Mark only one oval.

	1	2	3	4	5	
Stro	○	○	○	○	○	Strongly

agree

Section C: Employee Involvement in Quality / TQM

Please think about how you and your colleagues are involved in **quality improvement or process improvement**

14. I am actively involved in identifying problems in our work processes. *

Mark only one oval.

	1	2	3	4	5	
Stro	○	○	○	○	○	Strongly

agree

15. I regularly participate in activities aimed at improving quality in my department. *

16. My suggestions for improving quality are taken seriously by management. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯

Strongly

agree

17. I have enough authority to make small changes that improve quality in my daily * work.

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯

Strongly

agree

18. I receive feedback on the results of quality improvement initiatives I take part * in.

Mark only one oval.

1 2 3 4 5

Stro ⬭ ⬭ ⬭ ⬭ ⬭ Strongly
agree

19.   Quality improvement is a normal and expected part of my job. *

Mark only one oval.

	1	2	3	4	5	
Stro	⬭	⬭	⬭	⬭	⬭	Strongly

agree

Section D: Job Satisfaction

Please indicate how satisfied you feel with your job and organisation

20.   Overall, I am satisfied with my job. *

Mark only one oval.

	1	2	3	4	5	
Stro	⬭	⬭	⬭	⬭	⬭	Strongly

agree

21.   I feel fairly rewarded for the work I do. *

Mark only one oval.

	1	2	3	4	5	
Stro	⬭	⬭	⬭	⬭	⬭	Strongly

agree

22. I am satisfied with the opportunities for growth and development in this
    * organisation.

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

23. I would choose this organisation again if I had to start my career over. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

24. I rarely think about looking for a job in another organisation. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

Section E: Employee Engagement

These questions refer to how **engaged and energized** you feel in your work.

25. I feel full of energy when I start my workday. *

Mark only one oval.

       1   2 3   4   5

Stro ⚪ ⚪ ⚪ ⚪ ⚪ Strongly
                              agree

26. I am enthusiastic about my job. *

Mark only one oval.

	1	2	3	4	5	
Stro	⚪	⚪	⚪	⚪	⚪	Strongly agree

27. Time passes quickly when I am working. *

Mark only one oval.

	1	2	3	4	5	
Stro	⚪	⚪	⚪	⚪	⚪	Strongly agree

28. I feel proud of the work that I do for this organisation. *

Mark only one oval.

	1	2	3	4	5	
Stro	⚪	⚪	⚪	⚪	⚪	Strongly agree

29. I am mentally absorbed in my work most of the time. *

Mark only one oval.

```
        1    2   3        4        5

Stro ◯  ◯  ◯  ◯  ◯
                                    Strongly
            agree
```

Section F: Workplace Stress

Please indicate how much you agree or disagree with the following statements about **stress at work**.

30. I often feel under pressure because of my workload. *

Mark only one oval.

```
        1    2   3        4        5

Stro ◯  ◯  ◯  ◯  ◯
                                    Strongly
            agree
```

31. I find it difficult to relax after work because I still think about work problems. *

Mark only one oval.

```
        1    2   3        4        5

Stro ◯  ◯  ◯  ◯  ◯
                                    Strongly
            agree
```

32. I feel that I have too many responsibilities at work. *

Mark only one oval.

```
        1    2   3        4        5
```

Stro ◯ ◯ ◯ ◯ ◯ Strongly

agree

33. Changes at work in the last year have increased my stress levels. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree

34. I feel that work is negatively affecting my health or wellbeing. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly

agree